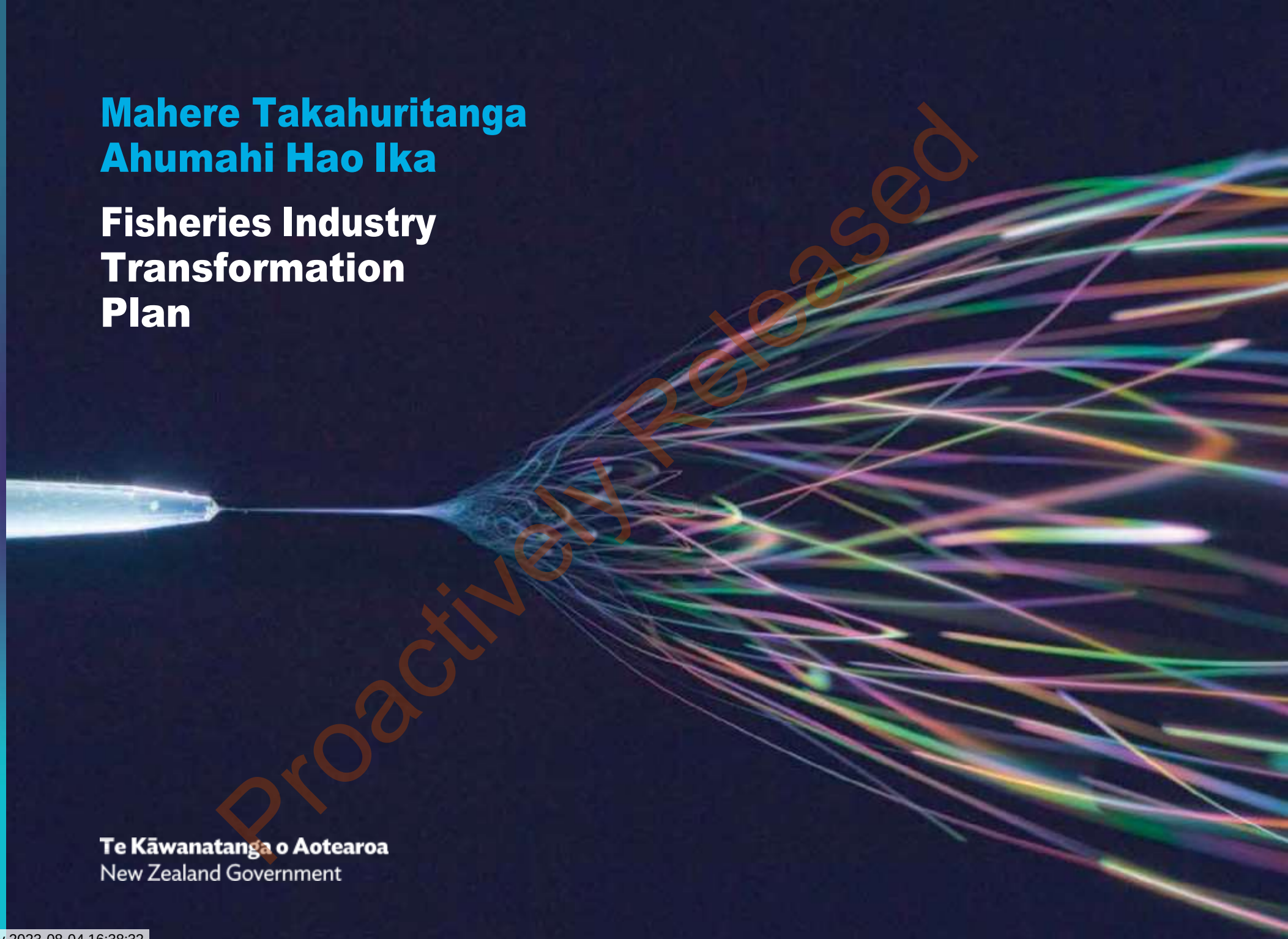
Mahere Takahuritanga Ahumahi Hao Ika

Fisheries Industry Transformation Plan



Te Kāwanatanga o Aotearoa
New Zealand Government

Scope of the Fisheries Industry Transformation Plan

The Fisheries ITP is focused on the wild catch sector of the New Zealand seafood industry. It sets out the first wave of actions toward sector transformation and sits within a broader work programme to manage the environmental effects of fishing.

The plan complements the Government's Aquaculture Strategy, which sets out a plan to sustainably grow the sector. A number of actions in the plan align with the direction of the Aquaculture Strategy and the plan is designed to work collaboratively on these shared goals.

Collaboration has underpinned the development of the plan and will be critical to its delivery. It is envisaged the Fisheries Implementation Steering Group will work collaboratively with other parties involved in sustainable marine activities that create economic value and social value, such as blue economy initiatives.

Cover Electrospinning nanofibres from hoki skin. Source: Plant and Food Research

Fisheries New Zealand

Tini a Tangaroa

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Tēna koutou katoa

As Minister for Oceans and Fisheries I am pleased to release *Mahere Takahuritanga Ahumahi Hao Ika – Fisheries Industry Transformation Plan*. This plan outlines a way forward for the future of the commercial fishing industry built around strengthening environmental performance, improving profitability and productivity, and supporting people and communities.

Within my responsibilities for oceans policy and fisheries management this plan is part of my broader work programme to care for our oceans and support New Zealanders to sustainably utilise this strategic resource to harvest food and create value.

Our marine area comprises more than 4 million square kilometres, which is 15 times our land area. Most New Zealanders live near the coast and the marine environment is part of our national identity and our economic, social and cultural wellbeing. The oceans are a shared resource, and we all have an interest in their health and in protecting marine biodiversity.

This plan supports the industry to build on its strengths and the strengths of our fisheries management system that is recognised as amongst the world's best. It also accelerates progress towards *Fit for a Better World*, the Government's vision for a productive, sustainable, and inclusive food and fibre sector. With substantial ownership in the sector, Māori businesses will help lead this transformation.

Wild capture fisheries are a vital part of many regional economies and communities across Aotearoa New Zealand. In 2023, the wild-capture fishing industry is forecast to generate $1.57 billion in export revenue while supporting whānau and businesses from Northland/Te Tai Tokerau to Stewart Island/Rakiura and the Chatham Islands/Rēkohu.

The industry is also navigating substantial regulatory changes – much of it aimed at strengthening environmental performance. Costs are also increasing and there are difficulties attracting and retaining workers. The plan supports the sector with a long-term vision and actions we can take now towards a more sustainable and profitable sector.

A key priority in the plan is strengthening the overall environmental performance of the sector, through investing in innovation, using data and reducing emissions. We can transform how we fish, manage the fisheries, and how we make data and insights available.

It is generally acknowledged that the volume of wild fish caught in Aotearoa New Zealand is unlikely to significantly increase, so we need to innovate to grow value. There are promising initiatives in some areas such as seafood-derived bioproducts with cosmetic, medical and nutraceutical applications. Investment will be required across the value chain to increase the value of the fisheries sector and improve environmental performance. The fishing fleet will require investment to reduce carbon emissions and to adopt fishing gear and methods that reduce the environmental impact of fishing.

The plan focuses on supporting people and communities. Kaimoana is enjoyed by New Zealanders and is part of many whānau celebrations and gatherings. The local sale and purchase of seafood and increased understanding of the industry will support improved connections between fishers and their communities.

I'd like to thank all those who engaged in the public consultation and the Leadership Group for their work in developing this plan. The actions start our journey to transform the wild capture fisheries sector.

I look forward to working with the Implementation Steering Group to successfully implement this plan and build on it over time.

Hon Rachel Brooking
Minister for Oceans and Fisheries

Te kōrero whakataki a te heamana o te Rōpū Kaiārahi
Leadership Group Chair's foreword

Ka pū te ruha, ka hao te rangatahi
The old net is cast aside, while the new net goes fishing

Tēna koutou katoa.

I am proud to support the release of *Mahere Takahuritanga Ahumahi Hao Ika – Fisheries Industry Transformation Plan* developed by the Leadership Group and informed by the public consultation process.

The wild catch fishing industry has played an important role in Aotearoa New Zealand's economy since at least the 1800s, starting with Māori fishing and trade. Māori are significant participants in the sector today, owning at least 40 percent of all fishing quota and Māori owned businesses harvest a significant portion of the catch.

The industry contributes to Aotearoa New Zealand's export revenues and provides food for New Zealanders, contributing to our food security and nutrition.

The industry employs more than 12,400 people across the seafood sector on the water and onshore. It is the passion and expertise of these people, and those joining the industry in the coming years, that will take the industry towards our vision of being acknowledged globally as the world leader in the innovative and sustainable production of premium seafood and bioproducts.

The sector has many strengths. In 2022, 96 percent of the catch from stocks of known status were from stocks with no sustainability concerns. Wild caught fish is a delicious, nutritious food which people love. Further developments in bioproducts, and the creation of new products for new markets, will increase the economic value of the industry and provide skilled and well-paid jobs.

The importance of the oceans and the seafood sector was evident from the more than 3,300 submissions received during public consultation. The oceans are a shared resource and submitters shared a common goal – to ensure healthy ocean ecosystems for the future. There were a range of views about how to care for the ocean and create value for Aotearoa New Zealand. As a direct result of the feedback provided, we have changed actions and added material about the use of bottom trawling and approaches to reducing its impacts.

This plan outlines 22 actions we believe will build on the sector's strengths and enable the industry's transformation to a low emissions, high productivity sector.

The industry's existence is dependent on the continued health of our marine environment and it will take action and investment to minimise the environmental impact of fishing activities.

I'd like to thank the members of the Leadership Group below whose joint efforts and insights have guided the development of the *Mahere Takahuritanga Ahumahi Hao Ika – Fisheries Industry Transformation Plan*.

The Leadership Group is confident about the future of the industry and our ability to work collaboratively together to deliver an environmentally sustainable and profitable sector with the wellbeing of people at its centre.

Thank you again to all those who have contributed to the development of the plan and to those who will participate in its implementation.

Wayne McNee
Independent Chair, Leadership Group

Leadership Group

Andrew Talley, Talley's
Craig Ellison
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WWF
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Emma Taylor
Fisheries New Zealand
George Hollinsworth
E tū

In pulling together this plan, the Leadership Group have acknowledged the following principles developed by previous collaborative efforts between industry and government:

- **Treaty of Waitangi and the Māori Fisheries and Aquaculture settlements** – respected and guiding our actions.
- **Kaitiakitanga** – a collective demonstration of guardianship and intergenerational sustainability.
- **Respect for our people** – valuing the contribution from all levels of industry and government.
- **Respect for our marine ecosystems** – valuing what sustains us and enhancing the marine environment.
- **Respect for our products** – proud of what we produce and achieving high value.
- **Respect for our communities and customers** – sharing the fruits of our collective endeavours and working with stakeholders.
- **Building on what is working** – enhancing the Quota Management System (QMS) as the foundation for the sustainable management of our fisheries.
- **Innovation** – celebrating innovation across everything we do.
- **Transparency** – an open and transparent fishing industry and management system.
- **Evidence-based decisions** – science and cost/benefit analyses underpin our work.

Snapper **(image source:** nzstory.govt.nz)

Whakarāpopototanga matua
Executive summary

Industry transformation plans are part of Government policy and are intended to support sectors with growth potential to contribute to a high productivity, high wage, low emissions economy.

This *Fisheries Industry Transformation Plan* was developed by a Leadership Group with fishing business, Māori, environmental, worker, food sector innovation and government backgrounds.

The plan is intended to: build on the strengths of Aotearoa New Zealand's wild capture fishing industry; seize opportunities, including in premium international markets; and navigate through the challenges the industry faces on the path to transformation to a low emissions, high productivity sector.

The Leadership Group has refined the plan based on the input received during public consultation on the draft plan. A range of people with Māori, iwi, industry, environmental, science and innovation, and worker perspectives provided feedback on the draft plan and on the opportunities and challenges facing the industry.

The plan sets out a vision that Aotearoa New Zealand is acknowledged globally as the world leader in the innovative and sustainable production of premium seafood and bioproducts.

The actions within the plan are centred around three priority areas – strengthening environmental performance; improving productivity and profitability; and supporting people and communities.

There are 22 actions in the plan across the three priority areas. Several actions have a strong environmental focus, including:

- investing in innovation to accelerate selective fishing and further reduce benthic (seafloor) impacts and protected species interactions (that is, reduce bycatch) (Action 1.1);
- advancing the use of marine and fisheries data and analytical and spatial models, to support fishers to avoid unwanted catch (including protected species), fish efficiently and to enhance the transparency of fishing activity (Action 1.4); and
- reducing the sector's carbon footprint by developing standardised measurement tools and publishing a report on the industry's carbon footprint (Action 1.5).

Other actions focus on improving profitability and productivity through increasing exports of high value seafood and bioproducts to discerning international consumers and improving returns and investment across the value chain, including:

- supporting emerging innovative seafood and bioproduct businesses to accelerate successful expansion into export markets (Action 2.2);
- accelerating the shift of large volumes of non-food fish material from low to higher value applications (Action 2.4); and
- improving the investment environment to enable investment in efficient and environmentally sustainable fishing vessels, fishing gear and methods, and automation (Actions 2.5 – 2.7).

The remaining actions focus on supporting people and communities, including:

- providing wellbeing support to those who work in the sector, and supporting new recruits and those who are transitioning to retirement (Action 3.2);
- developing the workforce of the future through a communication strategy on the career opportunities and benefits of working in the industry (Action 3.3);
- implementing initiatives to improve seasonal and generational retention (Action 3.5); and
- increasing communication about Aotearoa New Zealand's approach to fisheries management (Action 3.8).

The plan draws on insights from the report by the Prime Minister's Chief Science Advisor on *The Future of Commercial Fishing in Aotearoa New Zealand*. The actions relating to innovation, use of data and creating additional value through new products build upon opportunities highlighted in the report.

While the specific focus of this plan is on wild capture fisheries, some of the actions will benefit all parties with an interest in the ongoing wellbeing of Tangaroa. Collaboration will be key to achieving the best outcomes in the future. We will work with others, such as the aquaculture sector, where our priorities align.

Uaratanga me ngā wāhi matua hei whakatinana
Vision and priority areas for action

Priority areas and key themes

Strengthening environmental performance

→ Fishing with care and precision to support healthy ocean ecosystems

→ Utilising data to fish selectively, efficiently and to enhance the transparency of fishing activity

→ Reducing carbon footprint and improving resilience to climate change

Improving profitability and productivity

→ Increasing exports of high value seafood and bioproducts to discerning international customers

→ Improving returns and investment across the value chain

Supporting people and communities

→ Supporting people in the industry to thrive

→ Developing the workforce to grow the industry

→ Supporting communities to access local seafood and connect with fisheries

Actions

Strengthening environmental performance

Fishing with care and precision to support healthy ocean ecosystems

1.1 Invest in an innovation programme to accelerate selective fishing and further reduce benthic impacts and protected species interactions and within the programme:

- 1.1.1 establish a joint industry/government project to source and develop technology that minimises adverse impact on the ocean floor to the maximum extent practicable; and
- 1.1.2 review regulatory settings and operations to identify and mitigate regulatory barriers to fishing innovation.

1.2 Incentivise and facilitate fast adoption of proven efficient and environmentally sustainable fishing gear and methods by fishers by systematically identifying and then adopting improvements for each type of fishing method to reduce or remove environmental impact.

1.3 Investigate opportunities to apply new and mātauranga Māori methods of habitat restoration and enhancement in New Zealand, for example, sea ranching, seagrass and kelp restoration.

Utilising data to fish selectively, efficiently and to enhance the transparency of fishing activity

1.4 Advance the use of marine and fisheries data and analytical and spatial models to support fishers to avoid unwanted catch (including protected species), fish efficiently and to enhance transparency:

- 1.4.1 address barriers to the regular and timely release and sharing of data collected from fishers, including reviewing the Guidelines for Fisheries Data Release;
- 1.4.2 build technology and products that leverage data to support fishers;
- 1.4.3 collect and use appropriate data to support timely decision-making by fishers and fisheries managers to manage local distribution, seasonal variation, and effects on the aquatic environment; and
- 1.4.4 improve public availability of fisheries data and insights to enhance transparency.

Vision

New Zealand is acknowledged globally as the world leader in the innovative and sustainable production of premium seafood and bioproducts.

To deliver on this vision: we will work in harmony with nature, respect the ocean, draw on intergenerational knowledge, support local communities, provide meaningful employment, and invest in innovative technologies on-board and onshore.

Reducing carbon footprint and improving resilience to climate change

1.5 Invest in decarbonising New Zealand seafood businesses:
- 1.5.1 develop a standardised measurement tool to support businesses to measure and reduce their carbon footprint; and
- 1.5.2 develop and publish a report on the industry carbon footprint.

1.6 Invest in innovation to reduce the environmental impact of transporting premium seafood to international markets.

1.7 Support work underway under the Seafood Sector Adaptation Strategy to develop an adaptation pathway framework to assist the sector to prepare for, and adapt to, climate change.

Improving profitability and productivity

Increasing exports of high value seafood and bioproducts to discerning international consumers

2.1 Promote the New Zealand seafood story in priority international markets highlighting the environmental sustainability, transparency and traceability of New Zealand caught product.

2.2 Support emerging innovative seafood and bioproduct businesses to accelerate successful expansion into export markets.

2.3 Support industry to access information on export market requirements and compile the data needed to demonstrate transparency and traceability requirements.

2.4 Accelerate the shift of large volumes of non-food fish material from low to higher value applications to target market opportunities.

Improving returns and investment across the value chain

2.5 Invest in efficient and environmentally sustainable fishing vessels:
- 2.5.1 reach industry-wide agreement on a standardised (sister ship) design for the replacement of aging vessels in the inshore fleet; and
- 2.5.2 investigate whether any government support is available for the development of a New Zealand energy efficient vessel building industry.

2.6 Improve the investment environment for the seafood industry:
- 2.6.1 explore changes to government settings, including tax measures, like accelerated depreciation; and
- 2.6.2 encourage business arrangements (for example, longer term ACE packages) to enable increased investment across the value chain, from fish to fork.

2.7 Invest in priority automation solutions that meet business needs.

Supporting people and communities

Supporting people in the industry to thrive

3.1 Provide advice (particularly for small fishers) on fishing with selectivity and low environmental impact, improving vessel energy efficiency, and on effective business practices.

3.2 Provide wellbeing support to those who work in the sector, including new recruits and those who are transitioning to retirement.

Developing the workforce to grow the industry

3.3 Develop a communication strategy on the career opportunities and benefits of working in the industry.

3.4 Work more closely with the education sector to develop and implement fit-for-purpose qualifications and training.

3.5 Assess and implement initiatives to improve seasonal and generational retention.

Supporting communities to access local seafood and connect with fisheries

3.6 Promote domestic consumption and the nutritional benefit of New Zealand seafood, including encouraging local purchasing of fish.

3.7 Develop a communication strategy providing a window into the industry, the actions taken to support communities and a healthy marine ecosystem.

3.8 Increase communications about New Zealand's approach to fisheries management.

Te Tiriti o Waitangi

Te Tiriti o Waitangi guaranteed to Māori rangatiratanga over their fisheries and other resources.

Rangatiratanga includes the right to exercise kaitiakitanga in accordance with tikanga Māori. For fisheries, kaitiakitanga includes the duty to manage fisheries responsibly, the māuri of an area is strong/vibrant, and the fishery can provide for the needs of current and future generations. Rangatiratanga also includes the right to decide who may access the fishery and on what terms. Te Tiriti/the Treaty protects the ability of Māori to exercise these rights.

The Treaty creates the basis for governance of Aotearoa New Zealand by the Crown subject to the duty to protect and acknowledge Māori rights and interests. In some circumstances the application of the Treaty may place limits on Crown decision making or require specific provision for Māori to ensure the protection of Treaty rights.

Historically, the Treaty was only considered to be relevant to decision making to the extent provided in legislation. More recently the courts have recognised tikanga Māori as part of Aotearoa New Zealand's common law and as a value that informs its development. This means that tikanga Māori may be a relevant consideration in situations where there is no Treaty reference in statute and where the Crown is not a party to a decision.

Where there is no Treaty reference in statute the courts will generally presume that Parliament intends Treaty principles to apply to all decision making unless specifically excluded.

Image source: MPI

The principles of the Treaty provide for the Crown and Māori to act as partners together, participate together to identify and address issues, and for the Crown to protect Māori rights and interests.

Together the duty to act in accordance with the principles of the Treaty and the exercise of rangatiratanga in accordance with tikanga Māori provides strong direction to decision makers in the fisheries sector.

In implementing this plan government will work to:

- recognise the Crown obligations to act consistently with the Treaty of Waitangi;
- give effect to the principles of partnership, participation and protection that underpin the relationship between the government and Māori under Te Tiriti o Waitangi;
- provide for the exercise of kaitiakitanga in accordance with tikanga Māori;
- protect the rights and interests of Māori secured by the Fisheries Settlement;
- recognise that those rights are ultimately for the benefit of all Māori;
- work with iwi, hapū, whānau and Māori communities in partnership to enable full participation and the realisation of their aspirations as Māori to utilise their fisheries resources to benefit from the business and activity of fishing;
- enable Māori to have a voice at all levels across the sector; and
- safeguard and create a space for Māori cultural concepts, values and practices.

He tirohanga ki ngā rawa hao ika
Fisheries at a glance

4th
largest
Exclusive Economic Zone in the world

341,500
tonnes
of fish reported caught in 2022 calendar year

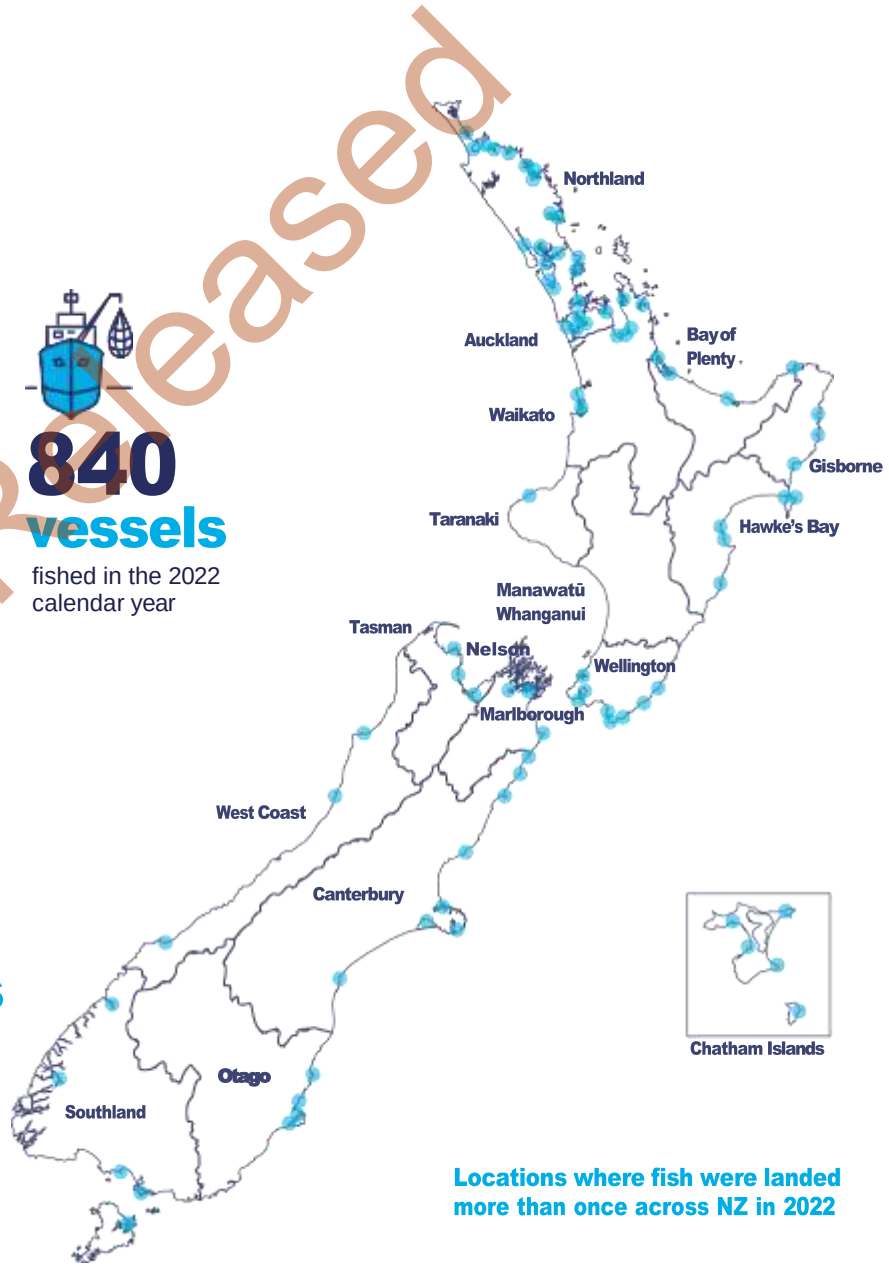
Māori
own at least 40%
of all quota

840
vessels
fished in the 2022 calendar year

$1.57
billion
forecast in wild capture exports[1]

12,490
people employed
in the total seafood sector,[2] 89% are New Zealanders

96%
of landings
from stocks of known status in 2022 were from stocks with no sustainability concerns[3]



Locations where fish were landed more than once across NZ in 2022

1 Source: https://www.mpi.govt.nz/dmsdocument/57298-Situation-and-Outlook-for-Primary-Industries-SOPI-June-2023
2 Source: http://www.workforceinsights.govt.nz. Around 1,000 people work in aquaculture production.
3 Source: Consistent with international best practice, stocks are considered to have no sustainability concerns when they are above the 'soft limit' – a biomass level below which a stock is deemed to be overfished or depleted.

Ngā mea kua rangona e ō mātou taringa
What we've heard

This section captures what we heard during the early engagement and subsequent public consultation on the plan. It also sets out the approach we took to engagement and how we analysed the feedback.

Image source: FirstMate

E ai ki ngā tau
By the numbers

3,303
submissions

86 written submissions
427 survey submissions
2,790 form email submissions

Many survey respondents and form email submitters also provided comments on individual actions and the plan. These comments are incorporated in the analysis of feedback by theme.

52
people
engaged online
and in person

11
site visits
and individual meetings with industry stakeholders

Comments on the plan and individual actions were made in the above meetings. These comments are incorporated in the analysis of feedback by theme.

I pēhea tā mātou whai wāhitanga
How we engaged

The Minister for Oceans and Fisheries launched the draft plan for consultation on 27 April. Public consultation was open for six-and-a-half weeks and closed on 11 June 2023. The aim of consultation was to ensure New Zealanders had an opportunity to have their say and to strengthen the quality of the plan.

Consultation on the draft plan was promoted through the Ministry for Primary Industries (MPI) website and Seafood New Zealand communications. Emails were also sent to permit holders (commercial fishers and quota owners), Mandated Iwi Organisations and Iwi Fisheries Forums with information on the draft plan and an invitation to meet. Some registered for the regional and online meetings.

To facilitate engagement the Fisheries New Zealand Secretariat and Seafood New Zealand held four regional meetings, six online meetings, and met with 11 industry stakeholders.

During the development of the draft plan, the Leadership Group heard from a range of people, including environmental non-government organisations and speakers with expertise in science, innovation and commercialisation, skills and workforce, marketing, exporting and internationalisation. The Secretariat also undertook engagement with a range of groups to gather a broader set of Māori, iwi, industry, science and innovation, and worker perspectives.

I pēhea tā mātou tātari i ngā whakahoki kōrero
How we analysed the feedback

A mix of qualitative and quantitative approaches have been taken to analyse the feedback received. Comments made in meetings were summarised and themes identified. The written submissions and comments included in the survey and form email submissions were reviewed, and common themes identified and summarised.

The Leadership Group was provided with meeting summaries, all written submissions and analysis of the survey and form email submissions. This feedback informed the actions in the Fisheries Industry Transformation Plan.

Ngā whakahoki kōrero i whiwhi e ai ki ngā kaupapa
Feedback received by theme

Written submissions

86 written submissions were received. Across all submissions there was broad support for improving the environmental performance of the fisheries sector, including reducing its carbon footprint and other negative impacts, and improving resilience to climate change. There was also strong backing for the proposed actions to support people and communities.

Survey submissions

The survey was designed to seek views on the actions proposed in the draft plan to transform the fishing industry. People were asked to rank the themes and the importance of each action.

Overall, survey respondents ranked fishing with care and precision to support healthy ocean ecosystems the number one priority. For those who identified as fishing industry business, the top priority was supporting people in the industry, and for those who identified as tanagata whenua and workers reducing carbon footprint and improving resilience to climate change was the top priority.

Form email submissions

We received 2,790 form email submissions that enabled submitters to select from six pre-formulated statements and to provide free form text. Almost all submitters sought a time bound transition away from bottom trawling and supported access to affordable fresh fish to feed whanau. There were also strong concerns against government funding for the inshore fleet or other environmentally impactful activities.

Strengthening environmental performance

Fishing with care and precision to support healthy ocean ecosystems

All submissions were supportive of reducing the environmental impact of commercial fishing, although approaches favoured for doing so differed.

Environmental non-government organisations advocated for an end to bottom trawling and favoured the use of regulatory approaches such as a ban or transition away from bottom trawling within a defined time period (10 years suggested by some), and greater use of spatial measures such as marine reserves to protect ocean biodiversity.

Company submissions supported investing in innovation to reduce the impact of bottom trawling and highlighted the current dependence of the industry on trawling and the limited area of Aotearoa New Zealand's Exclusive Economic Zone (EEZ) that is trawled. They were cautious about the likelihood of alternatives to bottom trawling being developed in the short term, noting that reducing the impact of trawling is an international issue that will be difficult and expensive to resolve. They were keen for more research into the impact of bottom trawling and for this to inform public debate. They also drew attention to the work underway to reduce the environmental impact of fishing.

Companies also noted that current business conditions may limit the resources available to invest in innovation.

Submitters were supportive of using best practice fishing gear. Some fishers queried who would pay for changes to fishing gear and the need to demonstrate that new gear was economically viable. Some submitters favoured regulating to require fishers to use gear that will minimise environmental impact.

Some submitters expressed concern that some of the examples given of possible new methods of habitat restoration in Action 1.3, particularly artificial upwelling, were experimental and could have unintended consequences. Other submitters highlighted the potential to use existing mātauranga Māori for habitat restoration and others indicated the priority should be on preventing harm in the first place so that restoration is not required.

Utilising data to fish selectively and to enhance the transparency and efficiency of fishing activity

There was strong support for making better use of data currently available and new data that will become available, such as from the on-board cameras programme. Submitters highlighted the amount of data that is collected and science that is undertaken to support fisheries management decisions and to monitor the status of the ecosystem. There was also a strong call for data to be made more available and accessible.

There was some concern expressed at the lower level of data on how many fish are taken and the pressure on fish stocks from recreational fishing. Some Māori communities also indicated a desire for more opportunities to partner with government to design and collect marine data in their areas that would help them to better care for their local environments and plan for sustainable utilisation.

Reducing carbon footprint and improving resilience to climate change

There was broad support for reducing the carbon footprint of the industry.

Views were offered on what could be included in a measure of the industry carbon footprint, with some positing that carbon released when sediment on the ocean floor is disturbed should be included. In the in-person meetings, when reference was made to a study estimating significant carbon release from sediment disturbance of the ocean floor, others noted that the study had been rebutted in a peer reviewed journal.

Company submissions indicated support for progressing decarbonisation, and to avail themselves of the government support available to do so.

Improving profitability and productivity

Increasing exports of high value seafood and bioproducts to discerning international consumers

There were limited comments received on these actions, with a quarter to a third of survey respondents rating these actions as neutral.

Company submissions, while supportive of increasing or realising new value from seafood products, also highlighted the risks and expense of developing new products.

Comments on the proposal to promote the New Zealand seafood story highlighted the need for fact-based information and communication domestically as well as internationally.

Improving returns and investment across the value chain

Significant feedback was received on investing in efficient and environmentally sustainable fishing vessels, with many noting that they did not support the inshore fleet innovation renewal project described in the draft plan for refreshing the fleet. Submitters who did not support this proposal considered:

- government funding should not be used to purchase vessels that would be used for trawling;
- the proposal was a low priority for government funding;
- the sister ship proposal might not meet their individual needs for a vessel.

Companies were supportive of investment in fishing vessels, noting that the inshore fleet is aging. Large fishing companies also identified that the deepwater fleet will need renewal and investment in the next 15 to 20 years.

Submitters also put forward the view that there was insufficient return on investment to purchase a new vessel in the current environment. They noted the price for fish being paid to Annual Catch Entitlement (ACE) fishers, increasing costs, and regulatory uncertainty associated with the Fisheries Amendment Act, new regulations around which fish can be returned to the sea, and the public pressure on fishing with particular gear or in particular areas as contributing to that environment.[4]

Some submitters commented on the QMS and identified that costs and regulation fall disproportionately on the ACE fisher, leading to lower returns and lack of investment in the inshore fleet. There was also a view that the relationship between quota owners and ACE fishers is dynamic and will continue to evolve in the future.For example, if the number of ACE fishers declines, they may be able to charge higher prices for fish/pay less for access to ACE.

Submitters identified that investment was needed to transform the industry, improve environmental performance, implement automation and create higher value products. Some submitters also identified the interdependency of transformation with investment in other parts of the economy, for example, investment in port infrastructure required to enable use of shore-based electricity by vessels. In parts of rural Aotearoa New Zealand, particularly where there is a concentration of tangata whenua, but populations are small, there is a lack of investment in local infrastructure, or aging infrastructure. For example, there is insufficient power infrastructure available north of Tokomaru Bay for industrial use. This impacts auxiliary industry such as setting up fish factories to employ locals and ensure supply chain continuity for iwi Māori fisheries.

4 Annual catch entitlement is the right to catch a certain amount of a fish stock during a fishing year.

Supporting people and communities

Supporting people in the industry to thrive

Support for fishers was identified as a key priority, and the top priority for fishing industry survey respondents. Fishers are facing a number of challenges, including regulatory changes, reductions in access to fishing grounds, and cost increases including fuel and labour.

Wellbeing support was seen as critical and some commented that they felt negative perceptions from some sectors of the community, as well as a sense of being over-regulated was having a negative impact on their wellbeing.

Developing the workforce to grow the industry

Industry submitters identified recruitment and retention of crew and workers as being a constraint on the industry. The industry needs a wide range of skilled people, including those with on-water, processing, marketing and entrepreneurial skills to develop new products. Labour and skill shortages are prevalent in the industry, and people shared stories about the challenges of attracting New Zealanders, particularly for at-sea roles. It was acknowledged that life at sea is not for everyone, but can provide rewarding careers across a wide variety of roles. Māori voices highlighted that rangatahi had become disconnected from the moana and there was a desire to educate them on its importance. They also highlighted the need to provide pathways for rangatahi into all levels of the industry, including vessel ownership.

Supporting communities to access local seafood and connect with fisheries

Submitters provided a wide range of feedback on this theme and it generated significant conversations in the meetings held. Submissions canvassed the price and availability of local fish, the role of supermarkets and the reduction in the number of fishmongers submitters had observed. Some submitters considered ACE fishers would benefit from being able to sell fish more directly and transparently to consumers in their communities, both from a financial perspective and from rebuilding the perception and image of the industry as people who care for the environment and their product and contribute to their local communities. Others commented on the red tape involved in selling fish direct to the public.

Other issues raised

Opportunities for collaboration

Many in the sector identified that there were opportunities for the industry to collaborate amongst itself and with government to gain greater value from the fish caught. People recognised that we are a small part of the global seafood market and collaborative promotion efforts to international consumers will benefit all. Collaborative efforts to solve common problems, such as reducing the environmental impact of packaging, could also be widely beneficial.

Impact of land use change on the marine environment

People shared stories of the land use changes they have seen and the impact this has had on inshore fisheries. They reported areas that had been rich with marine life that were now covered in sediment with limited marine life. People also shared stories of how debris washed into the ocean had impacted on fishing grounds.

Communicating the value of the industry

Many in the industry are looking for support from government to tell the story of the changes made in the industry and to be recognised as producing quality, healthy food and contributing positively to Aotearoa New Zealand. Many also recognise that premium global consumers are influenced by their perceptions and there is an opportunity to differentiate Aotearoa New Zealand from countries with poor fishing practices.

Te Taiao health and community wellbeing

Some Māori communities also noted the strong links between the health of the ecosystem/fish abundance and community wellbeing. Some iwi noted that the lack of abundance and availability of fish in the community was breaking down the cultural practice of manākitanga and the ability of hau kaingā to demonstrate their mana by providing for manuhiri. Whānau and iwi both expressed a desire to mitigate impacts on the environment and improve the availability of kaimoana by moving to uses that maximise the value extracted from marine resources acknowledging that kaitiaki, as a fish in the sea, also has value. This ran alongside a view that better education and information should be made available to fishers.

Protecting the value of the Māori Fisheries Settlement

Māori voices emphasised their ongoing commitment to fisheries and the importance of protecting the value of the 1992 Fisheries Deed of Settlement. The Crown has a Treaty duty to develop policies to provide protection for, and scope for the exercise of, rangatiratanga regarding traditional fisheries. Some felt that the regulatory environment has evolved in ways that undermine the Crown's obligation to provide for the development of the collective and individual interests of iwi in fisheries, fishing, and fisheries-related activities. For example, spatial restrictions on fishing reduce the areas in which fish are able to be accessed and may put more pressure on other fishing areas.

Opportunities for Māori fishers

Some submitters commented on the lack of pathways for rangatahi to enter the industry and the lack of access to iwi quota to support Māori fishers. Another submitter commented that they have policies and strategic aspirations to support Māori fishers – particularly those who whakapapa to their members. They also considered the relationship between their quota owners and fishers is best determined by the parties, not by government or regulation.

Early involvement in management decisions

Some iwi raised concerns around the opportunities for early involvement in the design of management interventions. They considered that the principles of the Treaty require a collaborative approach to identifying research and data needs, the identification and design of management objectives and outcomes, as well as education and information programmes that express the Māori perspective on fisheries and management.

Snapper **(image source:** nzstory.govt.nz)

He tirohanga ki ngā rawa hao ika

Fisheries in Aotearoa New Zealand

In developing a plan for the future of the industry, we build on the history of Māori and fishing, the Aotearoa New Zealand fisheries management system and acknowledge the cumulative pressures on the marine environment.

Image source: nzstory.govt.nz

Te hī ika: Māori me ngā mahi hī ika

Te hī ika: Māori and fishing

Māori are inextricably linked to Tangaroa by whakapapa.

For most iwi, fisheries have underpinned their culture and economy. Life was impossible without access to and control of fisheries resources.

Iwi were, and are, often renowned as kaitiaki of particular fisheries. Their mana often depended on their ability to provide manuhiri with those important species at hākari.

Māori also traded extensively, exchanging fish for other natural resources.

Fisheries were, and continue to be, a key part of Māori cultural identity. The ability to exercise rangatiratanga, kaitiakitanga and manākitanga over important fisheries continues to define most hapū and iwi.

After first contact and the signing of the Treaty, Māori extended their traditional trade to supply visiting ships and new European settlements and began trading with Sydney and other international destinations. Māori had become the first commercial fishers in Aotearoa New Zealand in the sense that we understand the term today.

While the Treaty guaranteed to Māori rangatiratanga over their fisheries, the Crown breached the Treaty. The ability of Māori to exercise rangatiratanga and kaitiakitanga over their commercial fishing interests was disrupted. For example, commercial fishing permits in the lucrative Auckland rock oyster fishery were denied to Māori.

Snapper **(image source:** nzstory.govt.nz)

Māori commercial fishing became incorporated into the general scheme of fisheries management where individual fishers required a permit from the Crown to take fish for commercial purposes. Māori community commercial harvesting ceased and commercial fishing by individuals declined.

Māori customary fishing, which had included social, cultural, and economic components, was now defined as being for non-commercial purposes alone.

In the early 1980s, the Crown, in the face of a rapidly declining open access commercial fishery, sought to introduce a management regime based on individual fishing quotas. As a precursor, access to fishing permits was restricted to full time fishers. Many Māori fishers were part time fishers, dependent on a mix of seasonal employment in processing industries, small scale farming, and commercial fishing to provide a viable income.

Consequently, many Māori were excluded from fishing in the years that were used to set individual quotas for fishers. Māori participation in commercial fishing further declined.

The QMS was introduced in 1986. The 1988 Waitangi Tribunal report on the Muriwhenua claim found that the newly introduced QMS was "in fundamental conflict with the Treaty's principles and terms". The High Court subsequently agreed with this view and an injunction was put in place to prevent the introduction of additional species into the QMS.[5]

In 1989, in an effort to provide redress for these Treaty breaches, the Crown and Māori negotiators agreed on an interim settlement that ensured Māori progressively received 10 percent of all fish species in the QMS or the equivalent value in cash. The Crown was successful in acquiring the agreed quota in most fish stocks.

The 1992 Fisheries Deed of Settlement secured a settlement of all Treaty claims relating to fisheries, provided for the settlement to benefit all Māori, and established a role for Māori in the management of Aotearoa New Zealand's fisheries. In the settlement, the Crown provided funds for Māori to buy a 50 percent stake in Sealord, and guaranteed 20 percent of quota for all new species brought within the QMS. In turn, Māori agreed that all Māori commercial fishing rights and interests were settled and they would accept regulations for customary fishing, cease litigation and endorse the QMS. In respect of customary non-commercial fishing, the settlement provided a number of tools, including taiapure, mātaitai and the right of hapū and iwi to authorise the taking of fisheries resources, which enable tangata whenua to autonomously manage their fisheries.

In respect of commercial fishing, and as a result of the settlement, Māori have returned as major players in Aotearoa New Zealand's seafood industry. Based on 2018 data, the Māori asset base in fishing was estimated to be worth $2.9 billion, with 81 percent of it owned by collectives.[6] Iwi collectively own over 40 percent of all quota and many have shares in fishing companies.

A large portion of collectives own fishing quota but do not fish or process fisheries resources. Their primary income from fishing is derived from the sale of ACE to individual fishers or fishing companies, including companies whose shareholders include iwi, such as Sealord and Moana New Zealand.

The returns from fishing support whānau and communities, as well as other business ventures. More frequently Māori communities have been indicating that while financial returns from their commercial interests are important, they are also seeking wider social, cultural and benefits from fishing for their communities.

As descendants of Tangaroa, iwi Māori have the obligation and responsibility to tiaki – care for Tangaroa so that he may continue to care and provide for iwi. Ultimately the right to kai – to enjoy the benefits of the living relationship between Māori and Tangaroa and its contribution to the survival of Māori identity – depends upon the ability of Māori to tiaki Tangaroa in a meaningful way.

Image source: Sean Cooper from the DOC Marine Conservation Unit

5 Motu Working Paper 07-02 "New Zealand's Quota Management System: A history of the first 20 years", April 2007.
6 Source: www.rbnz.govt.nz/hub/research/additional-research/te-ohanga-Māori—the-Māori-economy-2018

Pūnaha whakahaere rawa hao ika
Fisheries Management System

The Fisheries Management System has many elements as illustrated here:

Industry
- Non-regulatory measures
- Third-party sustainability assessments
- Industry bodies (e.g Seafood NZ)

Collaborative
- Fishery Plans
- National Plans of Action

Marine & Fisheries Science
- Resource, ecosystem and biodiversity monitoring
- Stock assessment
- Environmental effects quantification

Government
- Legislation
- Treaty obligations
- Regulations
- Quota Management System implementation
- Spatial management
- Verification & enforcement

At sea
- Observers
- On-board cameras
- Electronic reporting
- Geospatial positional reporting
- Fishery Officers

Quota Management System

Total Allowable Catch (TAC)
the total quantity that can be sustainably taken each year

Total Allowable Commercial Catch (TACC)
the total amount of fish the commercial sector is allowed to catch each year

Recreational
- Bag limits
- Size limits
- Closures & restrictions
- Honorary Fishery Officers

Allowance for recreational fishing

Allowance for customary fishing

Customary
- Managing customary fishing
- Kaitiaki
- Mātaitai
- Taiāpure
- Temporary Measures (rāhui)

Individual Transferable Quotas (ITQ)
Individual companies own quota that generates an annual catch entitlement (ACE) to harvest a proportion of the TACC

Total fish stock
Determined through stock assesment

Aquaculture

Rerenga rauropi me te pūnaha rauropi o te moana
Biodiversity and the ocean ecosystem

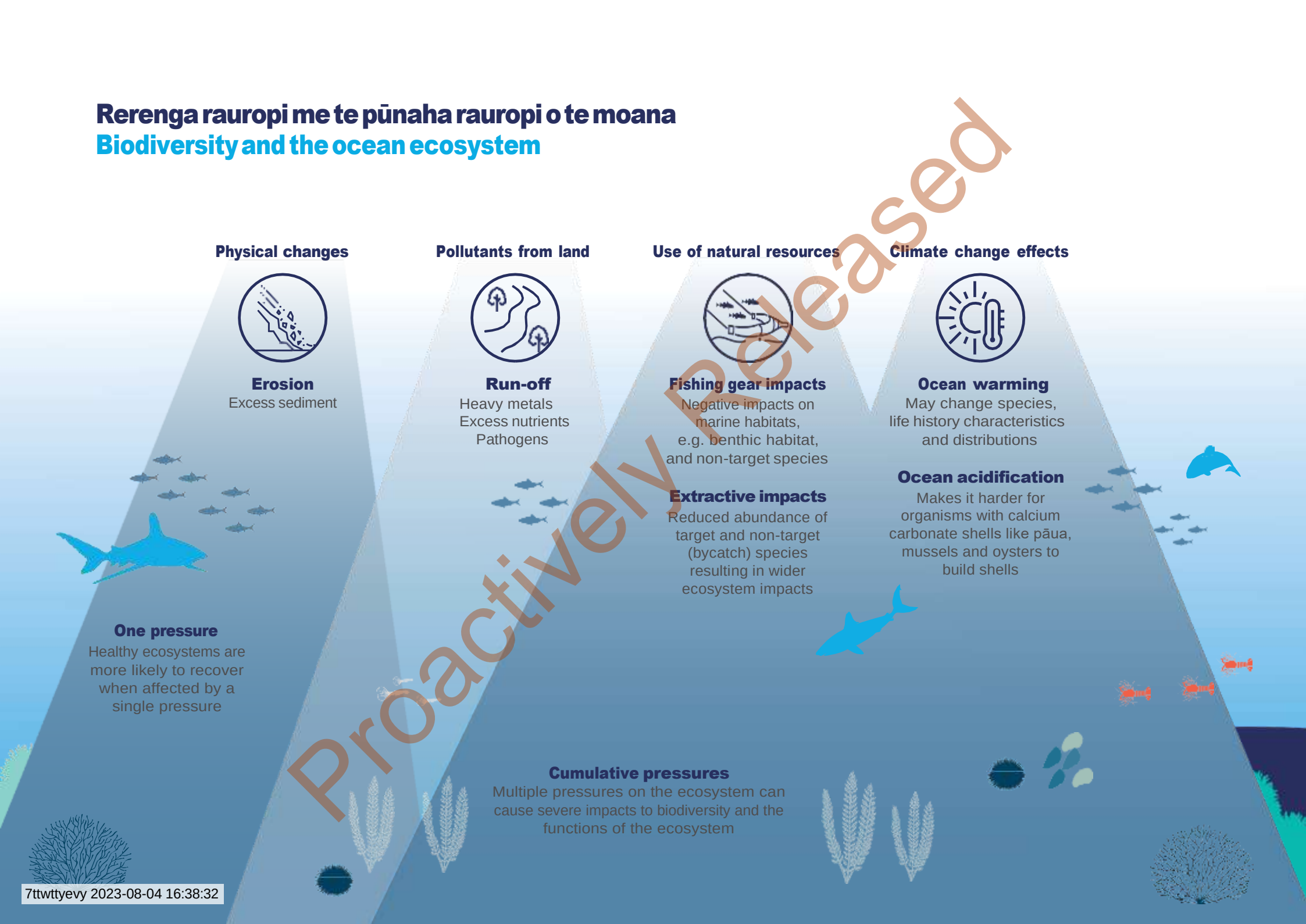


Image source: FirstMate

Te wāhi kei reira tātau ināianei
Where we are now

Our changing environment and global economic trends are creating new challenges for the fishing industry. These challenges also create the conditions for transformation, and how we respond can create opportunities to achieve better social, economic, and cultural outcomes for Aotearoa New Zealand.

Image source: Seafood NZ

Ngā whai wāhitanga mō te takahuritanga Opportunities for transformation

Māori economic growth – Across the food and fibre sector, Māori are at the forefront of growth. Mātauranga Māori approaches to commercial fishing have a strong grounding in the wellbeing of Te Taiao and Māori identity, and could potentially gain higher in-market premiums. Māori businesses will be among the leaders of transformation in the fishing industry.

One of the world's largest EEZs – Aotearoa New Zealand's Exclusive Economic Zone (EEZ) is the fourth largest in the world and is a significant strategic asset for our country. It creates both opportunities and responsibilities as we undertake activities that enhance our fisheries and environment.

Technology to improve precision fishing and environmental performance – Technological innovation can drive improved environmental outcomes by reducing interactions with protected species, undersized fish and the marine environment, while improving the quality of harvest and reducing costs for operators.

Making better use of data – Extensive data is collected on oceans and commercial fishing activity. Near real-time and better integrated data could be used to: avoid protected species and unwanted fish; guide fishers to efficiently locate target species; and minimise waste. Better connecting all ocean data and making it more widely available could benefit commercial, customary and recreational fishers.

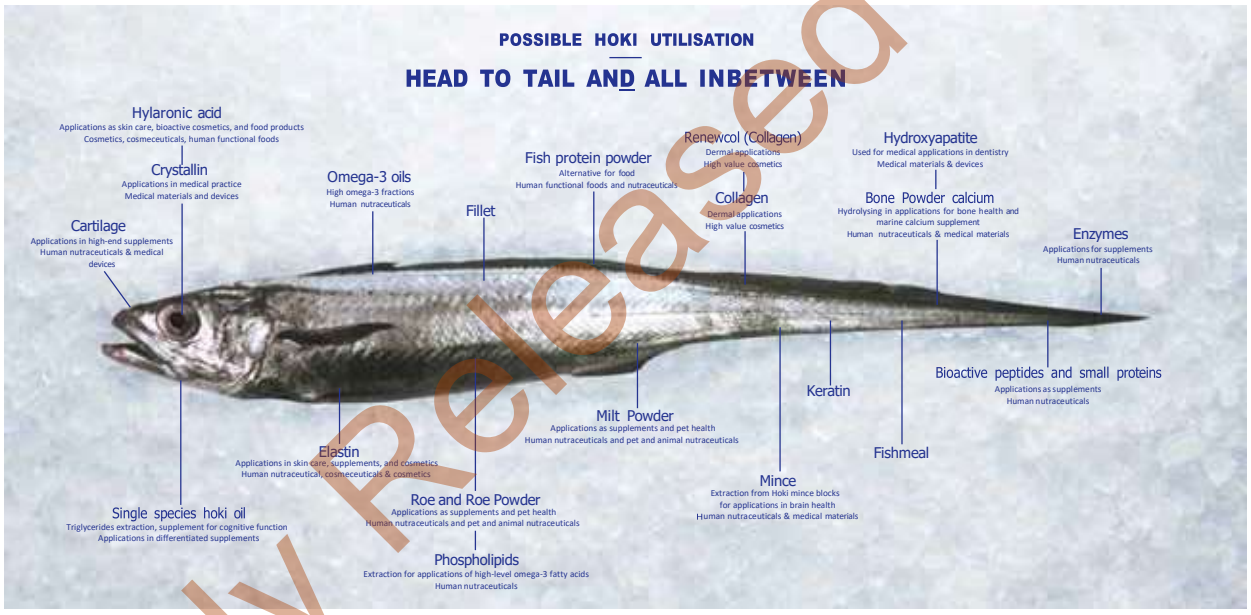


Image source: Sanford

Increased transparency – Making more information widely available about fishing practices and the movement of seafood products through the supply chain could increase the confidence of discerning international consumers in the environmental credentials and provenance of wild caught fish. It would also improve New Zealanders' understanding of what is happening in the marine environment.

The New Zealand Story (NZ Inc.) – Aotearoa New Zealand benefits from a strong environmental reputation, with high standards of food safety and a fisheries management system that is recognised as amongst the world's best. This country's seafood is a great product, the right product for consumers who demand sustainably produced food. Our seafood is harvested by passionate people, and it provides a source of healthy, low emissions protein that is in demand at home and across the world.

Innovation in seafood and bioproducts – Seafood can be used to make a wide variety of bioproducts that have high value applications, including cosmetics and nutraceuticals. New extraction techniques and product development will allow the seafood industry to improve utilisation and maximise value without requiring more fish to be caught.

Ngā kaikōkiri i te huringa
Drivers of change

Climate and environmental changes – Rising ocean temperatures and acidification around Aotearoa New Zealand are affecting the location and types of fish in our waters. Responses to climate change are driving a move away from fossil fuel reliance and high emissions activities.

Consumer preferences and community confidence – Global consumer preferences and expectations about the types of seafood products and methods by which they are harvested are changing. Discerning consumers are engaged, educated and seeking brands that verify they meet high social and environmental standards. Fish is one of the few wild food products New Zealanders regularly consume. Maintaining community confidence in fishing requires the industry to adopt and demonstrate high environmental standards.

Labour supply and demographic change – Access to workers at all skill levels is an ongoing challenge for the industry, particularly given the very tight labour market at present and the challenging nature of many roles in the sector. The existing workforce is aging, while regional populations are projected to shrink. Population growth is largely expected in major centres, away from most fishing activity. The future of the industry depends on attracting and retaining people to participate in the sector.

Image source: Sealord

Fleet capacity and efficiency – The total number of vessels operating has dropped substantially in recent decades, in part due to the economics of small scale fishing. Many inshore operators focusing on wet fish have found it difficult to invest in new vessels, so the fleet is comprised of a significant number of older vessels that are less energy efficient and do not meet modern expectations. The number of vessels operating in the inshore will likely reduce further.

Regulatory changes – With the introduction of the Fisheries Amendment Act 2022 (strengthening the commercial fishing rules relating to the landing and discarding of fish) and other regulatory changes, including the roll-out of on-board cameras, fishers need to adapt to new requirements for their fishing practices.

Cost pressures – Inflation and rising input costs are putting pressure on the industry. While many of these cost pressures are the result of global headwinds, others are specific to Aotearoa New Zealand's regulations. The combined effect on our fishing industry has been considerable.

Image source: Sealord

E ahu pēhea ana tātau
Where we are heading

Image source: National Institute of Water and Atmospheric Research

Te anamata o te ahumahi hao ika
The future of the fishing industry

In 10 years' time, our aspiration is that:

→ Aotearoa New Zealand is recognised and trusted internationally as a global leader in sustainable fisheries management and innovation.

→ Our products are sought after by international consumers who willingly pay high prices.

→ The fishing gear and methods used across the industry are selective (primarily those fish that the fisher is targeting are caught), there are very few interactions with protected species, and there is less impact on the seafloor.

→ Integrated data and insights are accessible for fishers and the public, guide fishing effort and show what is happening in our marine environment.

→ New Zealanders are proud of their fishing industry and regularly eat local wild caught seafood, improving their food security.

→ Māori achieve their aspirations in commercial fishing and the fishing industry draws on, and is informed by, mātauranga Māori.

→ Industry, Māori, environmental groups, recreational fishers and government work collaboratively to enhance the marine environment and support a productive and profitable industry.

→ The fishing fleet is energy efficient, older vessels stop operating, and the sector invests in modern vessels and upgrading older vessels to emit less carbon and reduce the environmental impact of fishing gear and methods.

→ The industry reduces carbon emissions across the value chain through its catching, processing, packaging and transport choices.

→ There is minimal biological and non-biological waste across the value chain.

→ The industry has confidence and is motivated to invest in innovation, vessels, automated processing and developing new products.

→ The industry is exporting valuable bioproducts from species that are currently high volume, low value per kilogram to international markets.

→ Rangatahi are attracted to working in the industry and the career pathways on offer.

→ Skill levels across the industry have risen, and people are well paid and experience positive wellbeing.

→ People who work in the sector share in the risks and rewards, are supported through industry changes, and can access wellbeing support.

This plan is focused on key actions that can be progressed now and over the next three years towards our vision:

Aotearoa New Zealand is acknowledged globally as the world leader in the innovative and sustainable production of premium seafood and bioproducts.

Future plans can build on this foundation and take further actions towards the industry we want to see in 10 years.

Te ine i te angitu
Measuring success

The actions in this plan are mutually reinforcing and work together. Implementation of the actions will lead to:

- Strengthened environmental performance
- Improved profitability and productivity
- Supported people and communities

The success of this plan will be shown in 10 years through:

	Strengthened environmental performance	Improved profitability and productivity	Supported people and communities
Reduced environmental impacts	✓		
Increased use of the best commonly available fishing technology by commercial fishers	✓	✓	
Reduced emissions across the industry value chain	✓		
Reduced median age of vessels	✓	✓	✓
Increased export earnings from wild catch		✓	
Increased average dollar per kilogram of exports		✓	
Increased volume and value of seafood bioproduct exports		✓	
Increased domestic consumption of fish		✓	✓
Increased community and consumer confidence in the industry			✓

Data is not currently available for some of the impacts we want to measure. Where data is not available, over the next three years as part of the implementation plan, we will investigate data sources to establish a baseline and measure progress.

Reduced environmental impact

Improving environmental performance of commercial fishing is a key pillar of this plan. The actions in this plan are complemented by other government work programmes, many of them regulatory, to also improve environmental performance of the commercial fishing sector and the health of the marine environment. This includes area or species-specific fishery plans, regulations on which fish can be returned to the sea, the rollout of on-board cameras, the Fisheries Amendment Act and work on protected areas.

Primary measures of environmental performance are being developed and reported on through other existing processes, including for National Plans of Action for seabirds and sharks, Threat Management Plan and the Aquatic Environment and Biodiversity Annual Report. The plan includes a focus on collating these measures to enable systematic monitoring of the environmental impact of commercial fishing.

Increased use of the best commonly available fishing technology

One way to reduce the environmental impact of fishing is to rapidly adopt technology that minimises environmental impact. Success will be measured by an increase in the use of the best commonly available fishing technology by commercial fishers. More selective and lighter gear will also enhance profitability through higher value catch and lower fuel costs.

WILD CAPTURE EXPORT PRICE, VOLUME AND VALUE 2019–27
Year to 30 June

	ACTUAL				FORECAST				
Product	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Export volume (tonnes)	238,864	232,183	206,325	221,340	204,300	212,900	213,400	209,800	205,900
Average export price (NZ$/kg)	6.32	6.02	6.61	6.54	7.70	7.50	7.60	7.80	8.00
Export value (NZ$ million)	1,509	1,399	1,363	1,448	1,570	1,600	1,620	1,640	1,650

Source: Ministry for Primary Industries, Situation and Outlook for Primary Industries June 2023.

Reduced emissions across the industry value chain

Tracking emissions across the industry value chain will measure progress on sector decarbonisation. Initial steps will include developing benchmarking and standardised tools for businesses to measure and reduce their carbon footprint and methods for calculating the aggregated emissions of the sector.

Reduced median age of vessels

Reducing the median age of fishing vessels (currently 44 years) will support lower emissions, less impactful fishing methods and better living quarters for crews, as older vessels are retired and replaced by modern vessels. Investment in new vessels is also an indicator of profit and investment conditions in the industry.

Increased export earnings from wild catch and increased average dollar per kilogram of exports

Increasing revenue from the wild catch harvest can increase the value created for New Zealanders. The total allowable commercial catch is unlikely to increase overall. Increasing the value of exports will require an increase in per-unit price either through a price premium for sustainable Aotearoa New Zealand seafood (measured through the increase in the average dollar per kilogram of exports) or through selling higher value products. Another measure of increased value could be an increase in market share in high value markets. However some premium products such as rock lobster and scampi would require additional product to increase market share, which is unlikely.

Increased volume and value of seafood bioproduct exports

Improved data will be needed to monitor the volume and value of seafood bioproducts and their contribution to the industry's export earnings.

Increased domestic consumption of fish

Seafood is a nutritious food to be enjoyed by New Zealanders. Some consume fish they have caught, while most are reliant on the commercial sector to access seafood. The publicly available data on domestic consumption is not as comprehensive as that on seafood exports and will require development to measure domestic consumption with publicly available data.

Increased community confidence in the industry

The industry has been negatively perceived by some in the community, which has impacted on the willingness of people to work in the seafood sector and purchase seafood. Negative perceptions of the industry have also impacted on the wellbeing of those who work in the sector.

Improved confidence in the industry could be measured in different ways such as measuring the proportion of: New Zealanders who eat fish regularly; those who believe the fishing industry cares for the marine environment; or those who view the seafood industry as providing well-paid and interesting careers.

In the first three years a baseline measure will be established to understand community confidence in the industry. Improving environmental performance, and showing the improvement through transparency and traceability, could be expected to have a positive benefit on community perceptions of the industry.

Mahere Mahi mō te Takahuritanga
Action Plan for Transformation

This plan sets out three priority areas to support the transformation of the fishing industry:

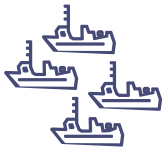
- Strengthening environmental performance
- Improving profitability and productivity
- Supporting people and communities

Image source: Plant and Food Research

He tirohanga ki te mahinga taiao
Environmental performance at a glance

96% **of landings** in 2022 from stocks of known status were from stocks with no sustainability concerns; **70%** of those are from stocks above their management target[7]

68% **of all catch** was taken by trawl on/near the bottom in the 2021/22 fishing year[8]



Around 150 vessels used bottom trawl as a fishing method in 2022

11% **of the area within Aotearoa New Zealand's** waters and around **33%** of fishable area has been contacted by trawl gear since 1990 and around **2%** of its waters and **5%** of fishable area is contacted each year[9]

Around 30% of Aotearoa New Zealand's EEZ (**14%** of fishable area) and **21%** of the Territorial Sea are closed to bottom trawl and dredging

341,500 **tonnes** of fish reported caught in 2022 calendar year

The fishing fleet is responsible for **almost 4% of Aotearoa New Zealand's** transport emissions

A preliminary study indicates that the **carbon footprint of Aotearoa New Zealand's deepwater fisheries** is significantly lower than many other sources of protein[10]

! Find out more

→ Further information on the status of Aotearoa New Zealand fishstocks can be found here: mpi.govt.nz/fishing-aquaculture/fisheries-management/fish-stock-status

→ Information on the management of the impacts of fisheries on protected species, including National Plans of Action, Threat Management Plans and reported captures of protected species, can be found here: mpi.govt.nz/fishing-aquaculture/sustainable-fisheries/managing-the-impact-of-fishing-on-protected-species

→ Further information on bottom trawling in Aotearoa New Zealand can be found here: mpi.govt.nz/fishing-aquaculture/sustainable-fisheries/strengthening-fisheries-management/bottom-trawling/

→ Information on the transport emissions of the maritime sector can be found at: eeca.govt.nz/about/news-and-corporate/news/government-funding-for-reducing-emissions-from-the-maritime-sector-announced

7 Consistent with international best practice, stocks are considered to have no sustainability concerns when they are above the `soft limit' – a biomass level below which a stock is deemed to be overfished or depleted.
8 All catch taken by trawl reported to be within 1 metre of the ocean floor.
9 Fishable area refers to waters shallower than 1,600 meters.
10 Source: https://deepwatergroup.org/wp-content/uploads/2023/05/The-carbon-footprint-of-fish-from-the-NZ-deepwater-trawl-fleet-A-preliminary-study-May-2023.pdf.

Hector's & Maui dolphin

→ About **15,000 Hector's dolphins** older than 1 year in Aotearoa New Zealand

→ Estimated **23 commercial fishing-related deaths** of Hector's dolphin per year – average of **~2 reported per year** over last 5 years

→ Estimated to be about **54 Māui dolphins** older than 1 year in Aotearoa New Zealand[11]

Extensive new measures were introduced in 2020 and 2022 through the Hector's and Māui dolphin Threat Management Plan to better protect the dolphins, resulting in:

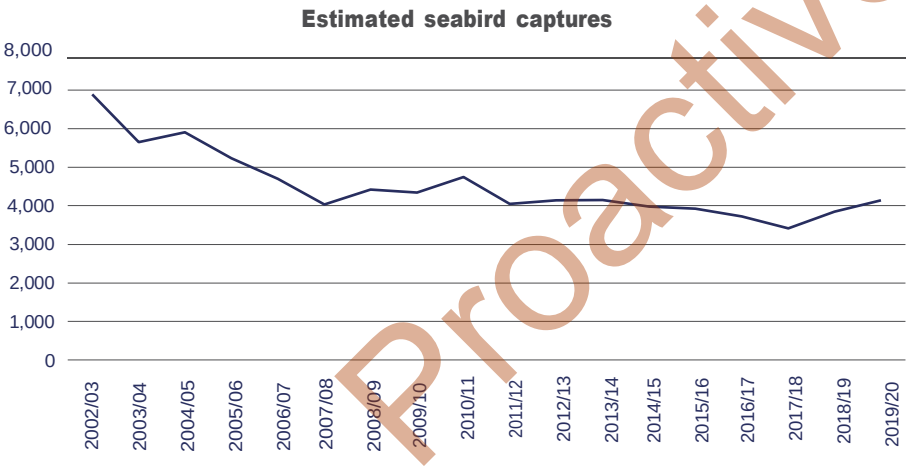
→ **12,825 square kilometres** of trawl closures and restrictions

→ **32,675 square kilometres** closed to set netting

→ regional **Fishing Related Mortality Limits** in place

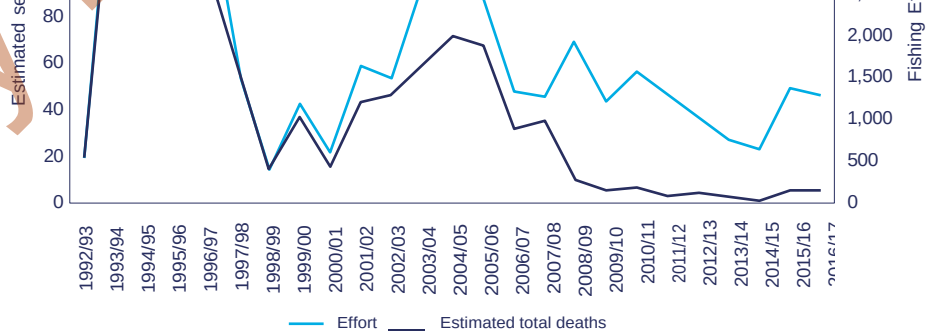
Seabirds

Estimated **seabird captures have declined from 2002/03** and averaged **3,780 per year over** the last 5 years[12]



New Zealand sea lion

In **2015**, the **New Zealand sea lion** population was estimated to be around **12,000 individuals**.



Estimated fishing-related **sea lion deaths** per year in the Auckland Islands squid fishery **declined from around 160** annually in the 1990s to fewer than **10 per year** over the last decade due to the use of **Sea Lion Exclusion Devices** and reductions in fishing effort in the area.

11 Source: www.doc.govt.nz/nature/native-animals/marine-mammals/dolphins/maui-dolphin/facts/

12 Source: https://protectedspeciescaptures.nz/PSCv6/released/explore/

Ngā mahi hei whakakaha i te mahinga taiao
Actions to strengthen environmental performance

The future of the commercial fishing sector depends on a healthy marine ecosystem. Fishing selectively, minimising the impacts of fishing gear on the ocean floor, and minimising protected species interactions, reduces the impact of commercial fishing on the ocean ecosystem.

Future technology and innovation developments may enhance the ecosystem. Being aware of these developments and applying them where feasible in Aotearoa New Zealand could strengthen environmental performance. Available technology and near future developments in artificial intelligence (AI), and imaging and digital capabilities, will enable a step change in the information we use to fish and care for the oceans.

Improving environmental performance underpins our ongoing ability to harvest fish and have a profitable commercial fishing industry. The importance of the ocean to New Zealanders requires the commercial fishing industry to minimise its impact on this shared resource.

The actions in this plan to strengthen environmental performance are complemented by a wider government work programme focused on biodiversity and marine health. Regulatory approaches are explored as part of this wider work programme.

Kia manaaki, kia tino tika te hao ika hei hāpai i ngā pūnaha rauropi ora

Fishing with care and precision to support healthy ocean ecosystems

1.1 Invest in an innovation programme to accelerate selective fishing and further reduce benthic impacts and protected species interactions.

The current state

Gear innovation has significant potential to lessen the environmental impact of fishing by reducing bycatch (juvenile fish, non-commercial fish species and protected species), accelerating selective fishing and further reducing benthic impacts.

Past examples of successful funding initiatives for gear innovation include the large-scale investment by fishing companies and government in Precision Seafood Harvesting, as well as the gear innovation pathway developed by Fisheries Inshore New Zealand through a project with Seafood Innovations Limited.

There are, however, still barriers to gear innovation as highlighted in the *Future of Commercial Fishing in Aotearoa New Zealand* report, including:

- regulatory approval of new fishing technologies;
- the cost and access to facilities to trial gear; and
- particular challenges for smaller fishers to get their ideas off the ground.

The action we will take

The industry and government will establish and resource an innovation programme to accelerate research into reducing environmental impacts, including bottom trawl and other fishing gear impacts and protected species interactions.

The New Zealand innovation programme will be informed by western science and mātauranga Māori, building on and learning from the approach taken in the Sustainable Seas national science challenge.

In three years

As a result of this action, in three years:

- An innovation programme with agreed priorities and support to access funding (for example through the Sustainable Food and Fibre Futures Fund) will be established. The programme will be: focusing industry and government efforts; strengthening relationships with researchers and science organisations; and providing pathways and support for smaller fishers.
- There will be an acceleration in developing and implementing gear innovations. These will range from incremental changes to traditional ways of fishing using nets, lines, hooks and traps to developing completely new ways of fishing.
- The innovation programme will be informed by mātauranga Māori and western science.

Approaches to reducing bottom trawl impacts

Globally, bottom trawling is one of the most used fishing methods. Many species that are caught by bottom trawling cannot currently be caught using other methods or are not economically viable to catch using other methods at the present time.[13]

Bottom trawl impacts on the seafloor depend on a range of factors including the locations of fishing, features on the seafloor such as seamounts, the flora and fauna present, and the frequency and duration of fishing.

There are four main approaches to manage bottom trawl impacts. The first two approaches – using alternative gear and modifying existing gear – are the focus of the actions in this Plan. These approaches require gear expertise, investment in testing and trialling, and support to adopt proven methods. The other two approaches manage bottom trawl impacts by closing areas to bottom trawling, or by managing, fishing effort and are the focus of other workstreams or systems in Aotearoa New Zealand.

A) **Using alternative gear** – Catching the same species without using trawl gear on or near the seafloor. In most cases, where a species is able to be caught using another method (for example, longline or potting), the catch per unit effort is generally lower, making these methods currently only economically viable for higher value species. Alternative fishing methods are not currently available for all species. In Aotearoa New Zealand, alternative methods are not yet available for hoki (a high volume species), orange roughy (a high value species) and some flatfish species.

B) **Modifying existing gear** – Continuing to use trawl gear but modifying gear to lessen or avoid contact with the seafloor. Globally there have been numerous attempts to mitigate the benthic impacts of bottom trawling by modifying gear. Most of these efforts have focused on lifting trawl gear components off the seabed to avoid benthic habitat. For example, Optitog in Iceland have developed gear that uses light to herd prawns up from the seafloor allowing the gear to operate above the seafloor.[14] This modification removes the need for trawl doors and ground gear, reduces unwanted bycatch and reduces fuel consumption (and associated carbon emissions). While there have been international examples of progress, they are often fishery-specific and not applicable to Aotearoa New Zealand's fisheries. In Aotearoa New Zealand, a recent report highlights the innovations some contract fishers have made to reduce seabed contact while fishing.[15]

NGĀ MĀTAI TAKE/CASE STUDY

Waikawa Fishing

Waikawa Fishing, a Picton-based fishing company, currently operates several vessels that exclusively target ling using specially-designed pots, and sell premium quality ling. They have also worked with the Cawthron Institute to investigate the feasibility of potting for scampi. While potting for scampi has been successful overseas, depth and conditions in Aotearoa New Zealand mean it is not yet a feasible replacement for trawling.

Map showing areas closed to trawling and trawl footprint as km^2 contacted per 25km^2 cells for all fisheries in 2021

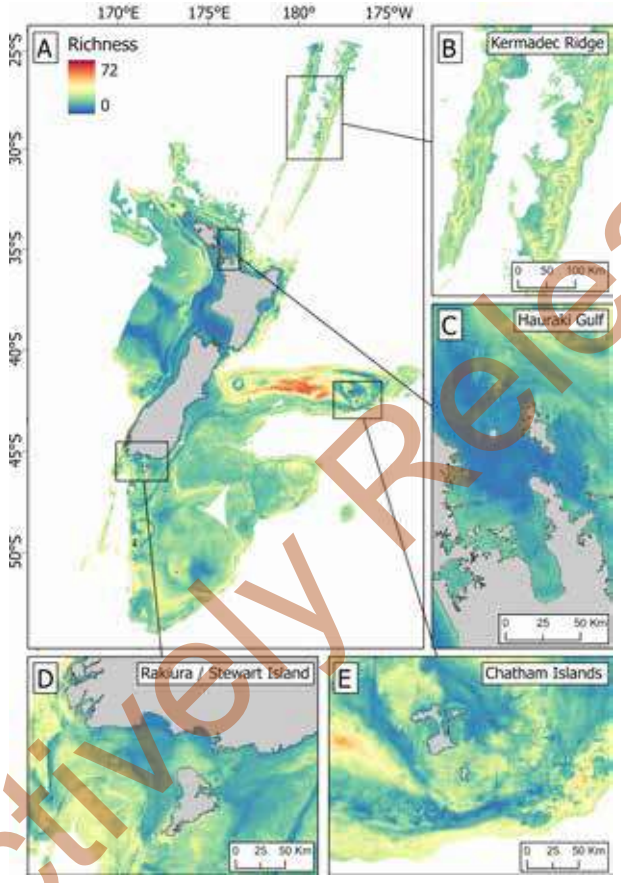
Source: MacGibbon, D.J.; Mules, R. (2023). Extent and intensity of bottom contact by commercial trawling and shellfish dredging in New Zealand waters, 1990–2021. New Zealand Aquatic Environment and Biodiversity Report No. 316. 174 p.

13 In New Zealand bottom trawling is defined as using trawl gear within 1 metre of the seafloor.
14 https://www.optitog.com/
15 Review of Moana New Zealand contract fishers' gear and practices reveals notable progress on reducing seabed contact | Moana New Zealand.

C) Establishing closed areas – Protecting biodiversity by closing areas to bottom trawling. Prioritising closure of areas for biodiversity protection requires biodiversity and its spatial distribution to be understood. Collecting relevant information, including basic life history characteristics of organisms is challenging and expensive given the depths of the seafloor. Most jurisdictions rely on scientific modelling to predict areas of greatest benthic biodiversity. Models currently represent the best tool, but their accuracy is dependent on the data available, the assumptions in the model and the type of model used. In Aotearoa New Zealand, sampling an area as large as the EEZ is prohibitively expensive, and most data has been collected from fishing effort. This can lead to bias in modelling of distributions as data is very limited in unfished areas.

In Aotearoa New Zealand, closed areas protect from bottom trawling impacts around 30% of the EEZ and 14% of the EEZ at fishable depths (<1,600m). These closed areas provide protection for 52% of the seamounts (features >1,000m elevation) in the EEZ.

D) Reducing fishing effort – A broader tool to limit fishing impacts, for example, by regulating the number and size of vessels (input controls). In Aotearoa New Zealand fishing effort is managed through the QMS. The QMS limits fishing effort via catch limits (output controls), and it also requires vessels to be registered and to have a valid fishing permit (input controls).



Indicative example: Map showing one approach to modelling species richness of seafloor invertebrates throughout the Aotearoa New Zealand EEZ

Source: NIWA (2023). Marine Biodiversity Framework for Aotearoa New Zealand. Biological Diversity Mapping. Prepared for Department of Conservation, Fisheries New Zealand. Ministry for the Environment. NIWA CLIENT REPORT No: 2023128HN.

Using information on benthic biodiversity to establish closed areas in Aotearoa New Zealand

An evidence-based approach, using the best available information on benthic biodiversity in Aotearoa New Zealand, is being taken in two processes considering the closure of areas to bottom trawling.

As part of *Revitilising the Hauraki Gulf: Government action on the Sea Change Plan,* bottom fishing access zones (a regulated spatial measure also known as trawl corridors) are being considered.

A similar approach is being taken to inform consideration of further restrictions on bottom trawling across the whole of Aotearoa New Zealand's EEZ.

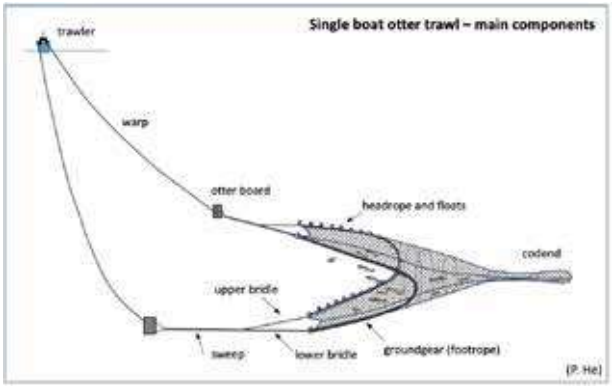


Image source: fao.org/fishery/en/geartype/306/en

Benthic Biodiversity in Aotearoa New Zealand

Understanding the impact of bottom trawling on the seafloor in Aotearoa New Zealand is dependent on our growing understanding of the following characteristics of our benthic environment:

- *Extent and intensity of bottom trawling* – The extent and intensity of seafloor contact by trawl gear has been mapped annually since the 1989/90 fishing year. Since this time a total of 11% of the area within Aotearoa New Zealand's waters and around a third of fishable area has been contacted by trawl gear. In 2021, the seafloor in around 2% of our waters and 5% of our fishable area was contacted by bottom trawling. The recent introduction of electronic monitoring methods has improved the accuracy of our seafloor contact maps. While the estimates of the intensity of seafloor contact have reduced, the direct impact per tow is not always well quantified.
- *Knowledge of the distribution and abundance of seafloor organisms* – The distributions of the presence of benthic invertebrates have been predicted for approximately 200 taxa. There are still large areas of the EEZ with high levels of uncertainty due to patchy knowledge of environmental variables, like substrate, and little to no biological data being available beyond fished areas. Abundance distribution models are in development for a few species but are currently too limited by sampling bias to inform management.
- *Knowledge of biological and life history characteristics* – The biological and life-history characteristics of benthic organisms are not well known.
- *Structure and functioning of seafloor ecosystems* – The understanding of the structure and function of seafloor ecosystems is limited.

Aotearoa New Zealand has ongoing research programmes to continue to improve information on benthic biodiversity.

NGĀ MĀTAI TAKE/CASE STUDY

Lightening the harvest footprint

Moana is actively seeking to lighten the footprint of its inshore finfish harvest. Moana engaged international fishing technologist, Dr Steve Eayers, along with Terra Moana, to review and study efforts by fishers to modify their fishing gear and practice to reduce contact and subsequent impact on the seabed. Fifteen fishers were interviewed on their fishing gear, fishing operation and voluntary efforts to reduce seabed contact and environmental impacts, including seabird interactions and bycatch reduction.

Some of the key findings were:

- fishers have good examples of innovation, at their own cost, as they aim to lighten their footprint;
- all participants have made modifications to their gear to lessen their impact on the seafloor and/or reduce bycatch;
- many participants have modified their headline gear to increase selectivity and their mesh size to reduce small fish bycatch;
- it is essential to have New Zealand information rather than using information from fisheries elsewhere; and
- fishers with the right support and incentives would be highly likely to consider additional modifications to further reduce seabed contact.

The report recommends that fishers should be given assistance, informed of potential options for improvement, and assisted in testing and development of improvements. It also notes that this might include the provision of incentives or subsidies to minimise their economic risk. They note that a more structured and co-ordinated approach to fast-track gear modifications is to engage fishers in a dedicated and collaborative effort with government, other fishers, researchers and other experts.

Moana has also invested in a mapping exercise working with their contract fishers to understand exactly where they are fishing. They overlaid catch and effort data with geographical maps of the ocean floor. Through this process Moana has been able to identify that Moana trawlers annually contact less than 3% of the Territorial Sea, and less than 1% of the entire Aotearoa New Zealand EEZ.

Source: Moana New Zealand.

1.1.1 Establish a joint industry/government project to source and develop technology that minimises adverse impact on the ocean floor to the maximum extent practicable.

The current state

Trawling is an efficient way to catch fish. Many of Aotearoa New Zealand's popular fish like snapper, squid and orange roughy live on or near the seafloor and are commonly caught by trawl fishing. The focus of this action is to source and develop technology, drawing on international research and innovations, to minimise the impact of fishing on the ocean floor while utilising Aotearoa New Zealand's EEZ to harvest fish.

Bottom trawling, defined as fishing using bottom trawl gear and fishing with mid-water trawl gear that operates within 1 metre of the seafloor, accounts for 68 percent of all fish caught commercially in this country.

The design and weight of trawling gear, towing speeds, tides and currents, and seabed characteristics influence the impact of trawling on the seafloor, which is an important habitat for many marine species.

The action we will take

Industry and government will establish a priority project with international collaboration to source and develop new fishing gear and methods to reduce adverse impacts on the ocean floor to the maximum extent practicable.

In the first year, a survey will be completed on available fishing technology and methods that minimise adverse impact on the ocean floor.

In three years

As a result of this action, in three years:

- The best available international trawling technology will be being sourced and modified for use in Aotearoa New Zealand conditions;
- There will be connections to and participation in international research focusing on minimising the impact of trawling on the ocean floor, testing and trialling approaches with greatest potential for Aotearoa New Zealand fish species and benthic conditions; and
- Alternative fishing methods (for example, potting) will be being explored, and projects already underway will be accelerated and new approaches will be being tested, trialled and piloted.

NGĀ MĀTAI TAKE/CASE STUDY

Sustainable Food and Fibre Futures: funding problem-solving and innovation

The Sustainable Food and Fibre Futures (SFFF) Fund has $40 million available each year to spend on a co-investment basis. SFFF is focused on supporting projects that are innovative and go beyond business as usual.

Seafood projects funded to date include:

- Unrealised Potential: Builds on the Precision Seafood Harvesting Primary Growth Partnership programme and aims to complete research on species survivability, selectivity and quality using this type of technology and to ultimately commercialise it.
- Pelagics 2023: Aims to both advance industry practice and determine the sustainability of pelagic fisheries by developing new management tools and data capture technologies.
- Ngā Huruhuru Waitai ō Tangaroa: Improved the sharing of information and insights into how to sustainably use marine resources while protecting tikanga Māori and taonga kai in the Māhia, Hawke's Bay and Wairarapa regions.

Find out more information and see whether your project could be eligible here: www.mpi.govt.nz/funding-rural-support/sustainable-food-fibre-futures/.

1.1.2 Review regulatory settings and operations to identify and mitigate regulatory barriers to fishing innovation.

Current state

While there is a need for safeguards to ensure new technologies and methods are fit for purpose and do not have unintended impacts, current regulations including the Fisheries (Commercial Fishing) Regulations 2017 constitute a hurdle to the approval of new fishing technologies.

Real-time monitoring of trawl nets underwater, for example, could be improved by using technology that incorporates a data transmission cable, the use of which is currently prohibited by regulations.

The use of data transmission cables was prohibited in 1992 due to the risks to seabirds from the cable. Seabird mitigation has improved significantly since 1992, although some risk remains. The regulation prohibiting cable use is under review.

The regulations specify some fishing methods that can be used commercially and others that are prohibited. Some prohibited methods limit the commercial use of selective fishing methods such as spear fishing.

In the past, operational practices were an additional hurdle when seeking approval of new fishing technologies, as experienced during the first Precision Seafood Harvesting trawl net approval process. Lessons have been learnt from this experience and operational practice has improved and continues to do so.

A risk-based approach is taken to fishing gear approvals. The granular reporting available through the electronic reporting regime enables any unanticipated negative impacts from a gear approval to be quickly identified and addressed through changes to the approval. The availability of this information and the ability to monitor enables a greater tolerance for risk in gear approvals.

Information already held is also used to inform new gear approvals. For example, the requirement for additional trials can be waived, where there is sufficient information to make decisions on the likely impact of new gear. This makes the process for seeking approvals to use gear in different areas, or on different species, more streamlined and less costly.

The action we will take

Government will review fishing gear regulatory settings and operational practices to identify and mitigate barriers to fishing gear innovation.

In three years

As a result of this action, in three years:

- New gear regulations will have been developed and approved and will be updated when required.
- Regulatory settings will be perceived as providing appropriate protections rather than being a barrier to innovation, and gear innovations will be being approved more efficiently.

1.2 Incentivise and facilitate fast adoption of proven efficient and environmentally sustainable fishing gear and methods by fishers by systematically identifying and then adopting improvements for each type of fishing method to reduce or remove environmental impact.

The current state

Fishers face a number of barriers to adopting newly proven fishing gear and methods including: knowledge and awareness of new approaches; concerns about the impact of a new approach on catch volume and income; capital costs of new gear; and, depending on the vessel set up, the costs and practicality of retrofitting a vessel to accommodate new gear and fishing methods. These barriers lead to some fishers using out-of-date gear and fishing methods with a larger environmental impact than the most up-to-date gear.

The action we will take

Industry will systematically identify best practice for each type of fishing method and cost-effective modifications to existing gear and methods to bring them up to best practice. A co-ordinated and collaborative approach will be taken to inform, support and encourage fishers to adopt up-to-date fishing gear and methods. This approach could be part of a navigator/advisory service for fishers, potentially drawing on existing industry relationships and resources, expanded to provide advice on up-to-date fishing gear, measuring and reducing carbon footprint (Action 1.5) and fishing selectively with fuel efficient vessels (Action 3.1).

In three years

As a result of this action, in three years fishers will be supported with practical cost-effective modifications and encouraged to use the most up-to-date fishing gear and methods. The Aotearoa New Zealand fishing fleet will be set upto reduce the environmental impact of the industry.

1.3 Investigate opportunities to apply new and mātauranga Māori methods of habitat restoration and enhancement in New Zealand, for example, sea ranching, seagrass and kelp restoration.

The current state

Technologies are being developed in Aotearoa New Zealand and internationally and there are also mātauranga Māori methods that could be applied to habitat restoration and enhancement. These technologies and methods may provide opportunities for sea ranching/restocking of species (rearing juveniles in a controlled environment before releasing them into the sea) to replenish stocks as part of ecosystem restoration and enhancement. Seagrass and kelp bed restoration could also contribute to restoring and enhancing ecosystems.

Some studies are already underway such as:

- Quantifying Blue Carbon: kelp contribution to carbon sequestration in marine sediments project by Blue Carbon Services funded through a successful 2021 Smart Ideas (Endeavour) bid.
- Building a seaweed sector project as part of the Sustainable Seas National Science Challenge – The Seaweed Sector Framework. Developed as part of this project is a roadmap for development of a seaweed sector that provides meaningful environmental, social and cultural benefits, as well as economic benefits to local communities and nationally.

The action we will take

Government and industry will undertake feasibility studies to determine opportunities to apply new and mātauranga Māori methods of habitat restoration and ocean enhancement.

In three years

As a result of this action, in three years:

- Around the country, commercial and recreational fishers, Māori and environmental groups will be working more closely together to support habitat restorations that enhance fish stocks and restore the marine ecosystem.
- At least three feasibility studies applying new and mātauranga Māori methods of habitat restoration will be complete.
- Pilots will be underway for methods identified as promising in completed feasibility studies.

Image source: Precision Seafood Harvesting

Te whakamahi i ngā raraunga kia whāiti, kia whāomo hoki te hī ika, me te whakapai ake i te pūataata o te mahi hī ika

Utilising data to fish selectively, efficiently, and to enhance the transparency of fishing activity

1.4 Advance the use of marine and fisheries data and analytical and spatial models to support fishers to avoid unwanted catch (including protected species), fish efficiently and to enhance transparency:

- 1.4.1 address barriers to the regular and timely release and sharing of data collected from fishers, including reviewing the Guidelines for Fisheries Data Release;
- 1.4.2 build technology and products that leverage data to support fishers;
- 1.4.3 collect and use appropriate data to support timely decision making by fishers and fisheries managers to manage local distribution, seasonal variation, and effects on the aquatic environment; and
- 1.4.4 improve public availability of fisheries data and insights to enhance transparency.

The current state

Substantial data is reported by fishers or collected in near real-time. The accuracy of this data will increase as on-board cameras are rolled out in the inshore fleet and oceans datasets are integrated. A significant amount of this data is considered commercially sensitive and is only accessible in-house by Fisheries New Zealand or by small groups of fishers or their representatives by agreement. Some data is made publicly available with significant aggregation or the specific agreement of the relevant permit holder(s).

There are some examples of fishers sharing data to inform fleet-wide notification of particular events (for example, captures of basking sharks). Fisheries New Zealand has internal processes using data analytics to provide alerts about protected species capture events.

The action we will take

To harness the power of available data and advances in analytics, government and industry will identify shared priority use cases to focus initial data sharing and development of analytical tools.

Industry will develop and adopt data tools for efficient and selective fishing.

Government will review the Guidelines for the Release of Fisheries Information and the classification of fisheries data in relation to the Public Records Act 2005, the Official Information Act 1982 and the Privacy Act 2020. The review will aim to allow significantly more data to be regularly available without compromising privacy or commercial sensitivity.

Following the review of the Guidelines, government will develop a plan for making more data and insights available to the public and increasing communications about Aotearoa New Zealand's approach to fisheries management (Action 3.8).

POTENTIAL APPLICATION

Creating a dashboard for the hoki fishery

Aotearoa New Zealand's hoki fishery generates over $165 million in export revenue.

Small hoki (one to three years old) are primarily found in the Chatham Rise area. Fishing in the area comprises around 35 percent of the total hoki catch. Fishers generally aim to minimise their catch of small hoki, and there have been a range of non-regulatory management measures in place. These include areas closed to targeting of hoki and agreements to move to a new fishing area if more than a certain proportion of the catch in a tow is smaller than a particular size.

A dashboard pulling together information on the catch quantity and rate (using electronic reporting data), the size of fish (based on company packing data), area fished, sea temperature (based on vessel data) and other oceanographic data, would allow fishers to better target their fishing activity and avoid small fish. It would also help manage the intensity of fishing spatially in near real-time (that is, avoid fishing in an area that was heavily fished on previous days).

In three years

As a result of this action, in three years:

- Fisheries data will be available to the greatest extent possible and a step change will be evident in fishing activity and regulatory practice.
- More fisheries data and insights will be available and accessible to the public.
- The availability of fisheries data will be improving the traceability and transparency of Aotearoa New Zealand's seafood, supporting brand integrity.
- New analytical tools will be being developed with integrated marine and fisheries data sets.
- Fishers will be fast adopters of new analytical tools, using them to make informed decisions at sea regarding risk of protected species interactions, the potential catch of unwanted fish species, and aggregations of target species.
- Collective decisions on management measures at relatively small spatial or temporal levels will be being made quickly based on fisher-reported information. For example, catch per unit effort may be monitored across a fleet to enable quota owners to voluntarily avoid certain areas with low catch rates to avoid exacerbating potential localised depletion.

Sources of marine and fisheries data:

Fisheries management data:

- Commercial fishers:
  - Reported by fisher – catch & effort details (time, date, location, species, quantity, target species, method, protected species interactions, gear details, sea state).
  - Vessel position data.
  - Reported by observer (includes scientific information).
  - Video footage review from cameras on boats.
  - Others – panel survey to estimate catch completed and published approximately every five years. More frequent monitoring at specific sites.
- Customary fishers: authorisations including maximum/expected take are provided to MPI.
- Recreational fishers:
  - Amateur-Fishing Charter Vessels – monthly reporting of date, location, target species, method, people fishing, time spent fishing, catch of specified species.

Science & research data sources include:

- Fishery-independent surveys.
- Moana Project detailing atmospheric conditions, sea level, ocean temperatures and ocean currents.
- Oceanographic information.

Other data sources:

- Mātauranga Māori knowledge and observations.
- Fisher observations.
- Community observations.

POTENTIAL APPLICATION

Right Time, Right Place proposal

Dragonfly Data Science is working with industry to propose the Right Time, Right Place project. The vision is to optimise operational fisheries management through a dynamic data driven platform: maximising benefits and minimising impacts in Aotearoa New Zealand's changing environment. This approach directly aligns with the vision of the Oceans and Fisheries Portfolio 'Ensuring the long-term health and resilience of ocean and coastal ecosystems'.

Dragonfly is developing an industry-led process to bring together company- and vessel-specific electronic reporting, geospatial position reporting data and ocean and fisheries modelling, to inform at-sea decision making. The project will use the Kahawai Collective framework to guarantee fully reproducible and transparent analyses for fisheries science.

Project outputs are intended to be made available through dashboards or other features, (that is, interactive maps to support optimised fishing to maximise benefits and minimise effects).

The Right Time, Right Place proposal is developing a data governance and data release framework alongside industry representatives, companies or fishers to access their data. It also uses existing infrastructure and established relationships to access data streams as they become available rather than through periodic updates.

Source: Dragonfly Data Science.

NGĀ MĀTAI TAKE/CASE STUDY

Using data to improve trawl efficiency and selectivity

New Zealand developments

Advanced Conservation Solutions (ACS): using artificial intelligence to fish more efficiently and sustainably

Image source: Advanced Conservation Solutions

Nelson company Advanced Conservation Solutions (ACS) has created 'DeepSet', a camera with machine learning algorithms to identify in real-time fish species entering a trawl net. The DeepSet system has been in development for three years with support from Callaghan Innovation. ACS' DeepSet is currently operating as a prototype in Aotearoa New Zealand's waters.

The ACS camera is attached to a trawl net. As a fish or mammal enters the camera's field of view, recognition software detects and identifies the species and transmits summarised information to the trawling vessel in real-time. The data is interpreted into a visual format and plotted on a screen.

DeepSet gives fishers the technology to respond to increased fisheries regulation. ACS facilitates real-time notification of the presence of non-fish protected species, assists in the reduction of non-quota bycatch, helps reduce trawl time and fuel costs, and aids the marine environment by reducing contact time with the ocean floor.

ACS envisages that better quantitative data on the whole-environment effects of current fishing management practices may enable more insightful quota and catch management. Better data should improve stock management and ultimately derive a more profitable and sustainable fishing industry.

ACS technology can be developed to identify any flora or fauna or seabed type, and instantaneously communicate the analysed data, anywhere in the world. Limitations in detection and identification are restricted to sensor effectiveness in a given environment and constraints in subsea communication. The tech could be configured to report anomalies in identification such as new or unfamiliar species, or configured to monitor changes to populations of fish, non-fish or plant species. It can also record any short- or long-cycle impact of climate change or marine or human activity on an environment.

The trials have been encouraging. The next steps are to demonstrate the system on different commercial fishing vessels, and gather more results to secure investor funding and attract commercial development and global distribution partners.

International developments – Deep Vision

Deep Vision, developed by a Norwegian company, is an advanced subsea vision system that identifies and measures fish underwater in real-time. During a haul, fish and organisms passing through the trawl are photographed by the stereo camera. Using Deep Vision software, species are registered, lengths are measured automatically, and the images are logged with depth and time information.

A research version of Deep Vision is currently available to purchase. A pilot is being installed on commercial fishing vessels in 2023 and the company is advertising that a commercial trawl version will be available to purchase in 2024.

To enhance trawl control, Deep Vision can be integrated with echo sound data and data from SYM 7 Autotrawl symmetry control. The combined systems will provide skippers with real-time and historical information about the catch and trawl. Once the haul is over the skipper will be able to analyse the logs from the combined systems to determine when and where the best catch occurred, how the trawl was positioned and behaved, the vessel speed and trawl movements, as well as the catch rates and species. This information will enable the skipper to reduce bycatch and fuel consumption.

Source: www.deepvision.no/

Te whakaheke i te pānga waro me te whakapai ake i te tū pakari mō te huringa āhuarangi

Reducing carbon footprint and improving resilience to climate change

1.5 Invest in decarbonising New Zealand seafood businesses:

1.5.1 develop a standardised measurement tool to support businesses to measure and reduce their carbon footprint; and

1.5.2 develop and publish a report on the industry carbon footprint.

The current state

There is growing awareness and focus on reducing the industry's carbon footprint along the value chain through to the end consumer. Some large companies are publicly reporting on their efforts to measure and reduce their carbon footprint, but there is currently no benchmarking or standardised measurement tool for the fishing industry.

With the Government Investment in Decarbonising Industry fund, there is significant support available to operators looking to find lower emissions alternatives for processing seafood on-shore. The Low Emission Transport Fund supports the demonstration and adoption of low emissions transport technology, innovation and infrastructure to accelerate decarbonisation of the transport sector. The eighth round of the fund in early 2023 had a focus for the first time on commercial maritime projects, including commercial fishing boats.

Fishing vessels contribute almost 4 percent of Aotearoa New Zealand's total transport emissions, with fuel use in the total maritime sector (including coastal shipping, commercial fishing vessels, ferries and recreational vehicles) responsible for nearly 10 percent.

The emissions reduction potential varies according to available technology. Options for commercial fishing vessels include propeller optimisation and hull coatings to improve energy efficiency. There are also options to improve efficiency of fuel use, for example, installing fuel flow monitors and to use alternative fuels for some part of the vessel operations, such as electrifying winches and using onshore power when in port and port infrastructure allows. Alternative fuels, particularly for deepwater vessels, are not yet available and it is an international effort to develop technologies to decarbonise the maritime sector.

In 2022, Aotearoa New Zealand signed up to Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL Annex VI). This international agreement includes requirements about ship energy efficiency and air emissions from ships, some of which apply to fishing vessels.

The action we will take

Government and industry will develop an emissions benchmarking and measurement tool that can be used by fishing industry businesses to measure changes in emissions and identify and take action to reduce emissions. The tool will be informed by the state of scientific knowledge and international approaches. The government will develop and publish a report on the carbon footprint of the industry, potentially similar to the Carbon Footprint of the Irish Seafood Sector report, which will also draw on the latest scientific knowledge.

Once developed, fishers and seafood businesses will be supported to use and apply the benchmarking tool and to access any government funds available to support decarbonisation. This could be provided through the advisory services proposed to aid fast adoption of new fishing gear and methods (Action 1.2) and provide advice on low emissions and selective fishing methods (Action 3.1).

In three years

As a result of this action, in three years:

- Businesses will be measuring, and taking action to reduce, their carbon emissions.
- Fishing vessels will be optimised to reduce fuel use and emissions.
- Onshore processing and transport of product will be reducing energy use where possible.
- A report on the industry carbon footprint will be published.

Economy-wide work will be progressing on liquid biofuels as part of reducing Aotearoa New Zealand's transport emissions, including maritime.

MARITIME DECARBONISATION UNDER THE FIRST EMISSIONS REDUCTION PLAN

The Emissions Reduction Plan includes a specific action to decarbonise maritime transport. Fishing vessels contribute over one-third of the commercial maritime emissions. The seafood sector is also dependent on international shipping to export products that are not airfreighted to international markets.

Key initiatives related to the decarbonisation of maritime transport are to:

- Develop a national action plan to reduce commercial and recreational maritime emissions.
- Set new targets for maritime emissions, including:
  - supporting the uptake of zero-emissions small passenger, coastal fishing and recreational vessels; and
  - all new large passenger, cargo and offshore fishing vessels to meet highest carbon-intensity reduction, as set by the International Maritime Organization, by 2035.
- Undertake research to advance the development and uptake of alternative low and zero carbon fuels for shipping in Aotearoa New Zealand and developing safety and environmental standards for their use.
- Work with other like-minded countries to put in place the conditions to allow low or zero carbon shipping on key trade routes by 2035.

1.6 Invest in innovation to reduce the environmental impact of transporting premium seafood to international markets.

The current state

Live (for example, rock lobster) and chilled seafood is currently airfreighted to international markets. This is a premium perishable product that delivers good returns to businesses. However, airfreight has a significantly higher carbon footprint than seafreight.

Aviation is one of the hardest industries to decarbonise and solving the issue will require international co-ordination and investment by airlines, aircraft manufacturers, the energy system and governments. As an exporter, the seafood industry will benefit from efforts to decarbonise international aviation (and seafreight).

Airfreighted product is packaged and tends to be transported in polystyrene chilly bins (poly bins) often wrapped in plastic because the thermal properties keep product chilled until delivered, and they are light, lowering the cost and emissions of airfreight. Poly bins are designed and produced as single-use products, are not reusable for the distribution of seafood and are not commonly recycled.[16]

The action we will take

Industry will in invest in an innovation programme to reduce the environmental impact of transporting premium seafood by exploring options to extend the shelf life of product (potentially enabling transport by sea rather than air) and investing in and adopting packaging improvements.

In three years

As a result of this action, in three years:

- Any new packaging that is light, has good thermal properties and is reusable or recyclable will be used for airfreighted product.
- An innovation programme will be investigating and piloting ways to extend the shelf life of product, including freezing technology that delivers product equivalent to the quality of chilled product.
- Emissions from transporting seafood will be reducing.

16 Croft, F and Farrelly, T. 2021. "Tackling plastic pollution in New Zealand's fin fishing industry. Case study: Moana NZ".

1.7 Support work underway under the Seafood Sector Adaptation Strategy to develop an adaptation pathway framework to assist the sector prepare for, and adapt to, climate change.

The current state

Climate change impacts for the sector will include changes in species location, size and composition, and more frequent weather events, with resulting impacts on infrastructure and marine ecosystems.

The Seafood Sector Adaptation Strategy has been developed and is being implemented.[17] The implementation group is a collaborative effort by industry, government and environmental NGOs to develop an adaptation pathway framework for hoki, snapper and farmed salmon. Adaptation pathways identify critical intervention points, based on an understanding of environmental thresholds and tipping points. Once the framework has been developed, businesses can then be supported to apply the adaptation methodology to their work so they can operate within the boundaries of acceptable risk and profitability.

The action we will take

The Seafood Sector Adaptation Strategy implementation group is developing adaptation pathway plans for hoki, snapper and farmed salmon in 2023. Once developed, government and industry will consider how to support the use of the framework and further assistance required by the sector to prepare for and adapt to climate change.

In three years

As a result of this action, in three years:

- Adaptation pathway plans will have been developed for a range of species to identify, prioritise and make decisions to address climate change challenges.
- Information on the adaptation pathway plans will be communicated and easy to access.
- Industry will be supported to prepare for and adapt to climate change.

Image source: FirstMate

17 www.theaotearoacircle.nz/seafood-sector-adaptation-strategy

He tirohanga ki te whai hua me te whakaputaranga
Profitability and productivity at a glance

Continued international demand for seafood

Prices of wild caught seafood expected to grow 19% over the next 10 years.[18]

→ **$1.57 billion exports** forecast for year ending 30 June 2023[19]

→ **$7.70 average** export price ($NZ per kg)[19]

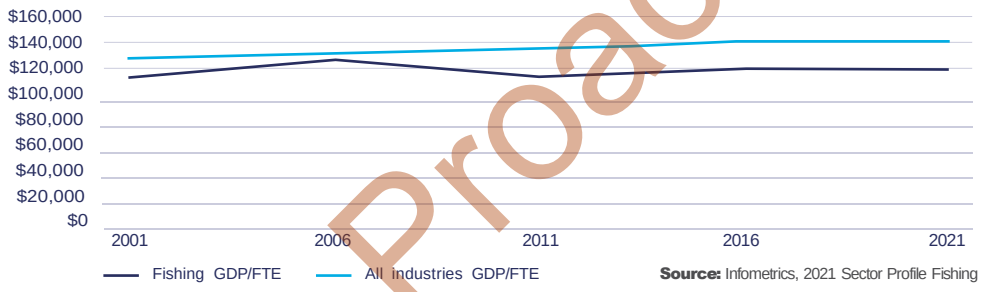
→ Wide range in **$ per kg value** from lower priced commodity products (eg hoki block) to higher value prestige products like rock lobster

Our high volume catch has lower per kg prices[20]

Room to improve productivity

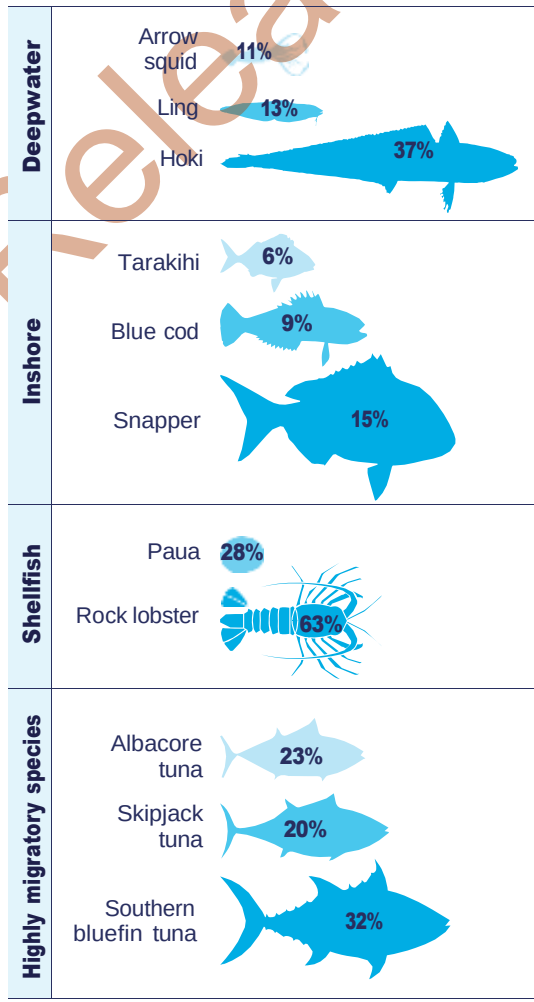
→ While productivity in the fishing and aquaculture production sector is higher than the seafood processing sector, the overall productivity of the sector is low relative to other sectors

Aotearoa New Zealand's fishing industry labour productivity compared to all industries

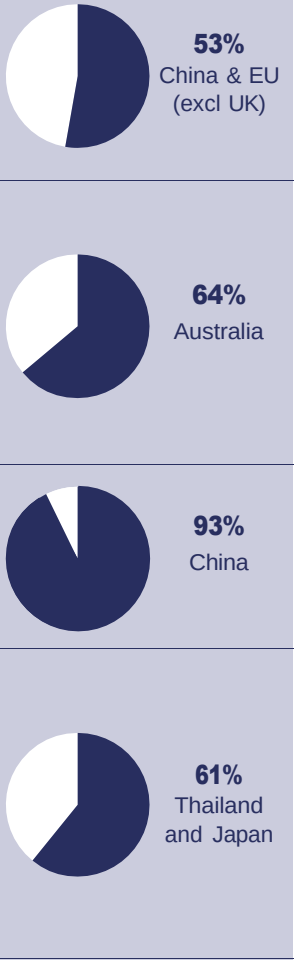


Source: Infometrics, 2021 Sector Profile Fishing

The species that underpin the catch value of the fishing sectors



Top export markets by value[18]



18 Source: OECD-FAO AGRICULTURAL OUTLOOK 2022–2031 © OECD/FAO 2022.
19 Source: https://www.mpi.govt.nz/dmsdocument/57298-Situation-and-Outlook-for-Primary-Industries-SOPI-June-2023
20 Source: based on data from deepwatergroup.org/wp-content/uploads/2022/09/BERL-2022-Commercial-Fishing-Economic-Contribution-Final-Report.pdf

Gurnard (**image source:** Seafood NZ)

Ngā mahi hei whakapai ake i te whai hua me te whakaputaranga
Actions to improve profitability and productivity

Economic wellbeing contributes to overall community wellbeing. A robust and resilient commercial fishing industry will continue to provide quality seafood and increasingly produce high value bioproducts such as collagen and nutraceuticals. Many actions in the plan require investment, which will be influenced by business profitability and government settings (such as the tax system). The actions to lift profitability and productivity are across the value chain, improving what we do now, and investing in creating new products for new markets in the future.

Te whakapiki ake i ngā kaimoana me ngā huakoiora hoko ki uta nui te uara ki ngā kaiwhakapeto hinengaro hihiri o te ao

Increasing exports of high value seafood and bioproducts to discerning international consumers

2.1 Promote the New Zealand seafood story in priority international markets highlighting the environmental sustainability, transparency and traceability of New Zealand caught product.

The current state

The 'New Zealand story' develops free resources for use in promoting this country offshore. Businesses can use the videos, images and infographics to promote their products. A New Zealand seafood story was developed in 2017. More recently seafood has been part of the New Zealand Trade and Enterprise (NZTE) 'Made with Care' programme. This programme runs campaigns across several large markets promoting consumer awareness and preferences for Aotearoa New Zealand sourced products to drive their purchase behaviours in key export markets.

The action we will take

Industry and government will work together to promote the sustainability, transparency and traceability of Aotearoa New Zealand's seafood to international markets.

In three years

As a result of this action, in three years:

- The New Zealand seafood story will be showcasing the environmental sustainability, transparency and traceability of local seafood.
- Businesses will be using the New Zealand seafood story in promoting their products.

2.2 Support emerging innovative seafood and bioproduct businesses to accelerate successful expansion into export markets.

The current state

Government agencies provide resources to support seafood industry exporters to understand their consumers and markets. There are opportunities to promote the use of these resources and to better tailor them, particularly for small and medium enterprises.

GLOBAL INNOVATION LAUNCH PAD FOR NEW ZEALAND AQUACULTURE

To support internationalisation of innovative and ambitious aquaculture companies from Aotearoa New Zealand, Hatch Innovation Services is providing business support and market advisory services. A part time global market programme will take place online over two months, with support from industry experts, helping successful applicants to refine their go-to-market approach and value proposition to accelerate successful market expansion into global aquaculture markets.

The action we will take

Government and industry will promote resources available to support exporting businesses and consider a programme to support and mentor small and medium sized emerging innovative seafood and bioproduct businesses to expand into export markets. The programme will build on lessons learnt from the Hatch Innovation Services/NZTE Global innovation launch pad for Aotearoa New Zealand's aquaculture programme.

MPI, as part of *Rautaki mo te Taurikura: Embracing change for prosperity,* will be providing tailored support to Māori export businesses.

In three years

As a result of this action, in three years small and medium sized innovative fishing industry businesses will be mentored and supported as they expand into export markets.

NGĀ MĀTAI TAKE/CASE STUDY

From the Hauraki Gulf to 'Fish of the Day' in leading international restaurants

Lee Fish take an artisanal approach, treating each fish with care to deliver quality seafood to the tables of top domestic and international restaurants in Matakana, Wellington, Manhattan, Toronto and Zurich.

Small boats with a skipper (plus one to two crew) venture into the Hauraki Gulf at dawn, returning to unload their catch on the same day. The fish comes aboard the boat alive, one at a time, and is quickly spiked via 'iki-jime'.[21] This method is a lot of work and limits the fish that can be caught in a day. The result is a cleaner tasting fillet and a major increase in quality, with the final product well and truly 'sashimi-grade'. Shelf life is also extended, allowing the fish to reach customers on the other side of the world in 'just caught' condition.

The fish is carefully graded, packed, and in the shortest time possible transported from the boat to the customer. The chef receives a mixed box of fish carefully chosen by the grader; it might be primarily snapper, and may also have a few blue cod, tarakihi and other species. The chef can showcase a variety and provide diners with premium seafood.

The fisher is rewarded for their efforts and diners around the world get to enjoy quality Aotearoa New Zealand seafood.

Source: www.leighfish.co.nz/

21 Iki jime is a humane method of killing fish scientifically proven to minimise stress for the fish while also maximising its eating qualities.

Snapper (**images sourced from:** nzstory.govt.nz)

NGĀ MĀTAI TAKE/CASE STUDY

Rautaki mo te Taurikura – MPI's plan to support the Māori food and fibre sector to prosper

Rautaki mo te Taurikura: Embracing change for prosperity was launched at Fieldays in 2022 and sets out the Manatū Ahu Matua inaugural plan to grow partnerships with Māori in service of their aspirations in the food and fibre sector. The vision is *"Ka angitu ngā pākihi Māori, ka ora ai ngā hapori Māori, ka ora ai a Aotearoa. Māori businesses succeeding, Māori communities thriving, Aotearoa prospering."*

Manatū Ahu Matua recognises that, across the food and fibre sector, Māori are uniquely positioned to be at the forefront of growth and be a beacon for others in the sector to do the same.

Rautaki mo te Taurikura identifies three initial priority areas of mahi that Manatū Ahu Matua will focus on to accelerate economic prosperity for Māori – including partnerships, investment and building services to meet the aspirations of Māori. The plan outlines the commitment that Manatū Ahu Matua is making to ensure its services are better aligned to back and enable Māori interests, and Tini a Tangaroa (Fisheries New Zealand) is undertaking work as part of this.

Source: MPI.

23 Support industry to access information on export market requirements and compile the data needed to demonstrate transparency and traceability requirements.

The current state

The seafood industry is required to track and trace product from the supplier to the next recipient in the supply chain. This is currently conducted using different traceability systems and technologies that may or may not be interoperable with other supply-chain data streams.

Official assurances are limited to food safety and technical attributes as negotiated between governments, and for animal products are provided through the electronic certification system (E-Cert). Fisheries related data is accommodated through a separate system not connected to E-Cert.

Fisheries data, traceability data, food safety and other data required for official assurances, as well as other verifiable attributes that could be used to provide assurances, are not integrated to allow easy traceability along the value chain.

The action we will take

The industry will use available and soon-to-be available technology to access information on export market requirements and to demonstrate the transparency and traceability of products.

Government will provide support to exporting businesses to navigate export market requirements.

In three years

As a result of this action, in three years:

- Industry will easily be accessing information on international market requirements.
- By using E-Cert, and integrating fisheries data, where possible, to certify the attributes of products, industry will achieve transparency and traceability.
- MPI's Future of Certification programme will be replacing manual processes with full automation where appropriate.
- Government will be providing support to exporting business and MPI will be providing tailored support to Māori export businesses.

24 Accelerate the shift of large volumes of non-food fish material from low to higher value applications to target market opportunities.

The current state

Most of Aotearoa New Zealand's non-food fish material from current harvest is rendered and used for low value applications (for example, fertiliser, fish meal). While niche high value applications may be attractive, in many cases these are cost-intensive to develop and market, and there are limits on the market size and/or the amount of material that can be diverted into those products.

Researchers and developers in this country are investigating techniques to create bioproducts from seafood with potential uses and markets. International researchers and developers are also investing in this area.

The action we will take

Industry will identify options to create and market higher value products from material that is currently rendered and used for lower value products.

Government will partner with industry and researchers to identify and test existing non-food fish material technologies for application to Aotearoa New Zealand.

Government will partner with industry in developing export markets for higher value products made from non-food fish material.

In three years

As a result of this action, in three years:

- The shift to higher value products from non-food fish material (for example, human edible oil, peptides, collagens and high-end pet food) will be gaining momentum, increasing the income earned from the harvest.
- New markets will be being developed for the higher value products being made from non-food fish material.
- Overseas technologies will be quickly adopted and adapted for Aotearoa New Zealand, with business cases prepared once the technology has been proven.
- Further research into new ways to shift additional non-food material up the value scale will be underway.

Image source: MPI

Te whakapai ake i ngā moni hua me te haumitanga puta noa i te mekameka uara
Improving returns and investment across the value chain

2.5 Invest in efficient and environmentally sustainable fishing vessels:

2.5.1 reach industry-wide agreement on a standardised (sister ship) design for the replacement of aging vessels in the inshore fleet; and

2.5.2 investigate whether any government support is available for the development of a New Zealand energy efficient vessel building industry.

The current state

Refreshing Aotearoa New Zealand's fishing fleet will support the transition to an efficient and environmentally sustainable fishing industry. There were 840 active fishing vessels in this country in 2022 and the mean age of the vessels is 44 years. The age of the current fleet indicates investment is required, particularly in inshore vessels, although the deepwater fleet will also require replacement in 15 to 20 years. Replacing older vessels with modern vessels or significantly upgrading older vessels will enable lower emissions, less impactful fishing methods and more attractive living quarters for crew across the industry.

Investment in fishing vessels requires confidence in the future of the industry, including returns. Vessel owners who do not own quota also require confidence about future access to ACE. In the past some quota owners have supported ACE fishers to purchase vessels through multi-year ACE packages.

The Leadership Group acknowledges the potential benefits from renewing the fishing fleet taking a standardised (sister ship) design with Aotearoa New Zealand based manufacturing approach as proposed in the inshore fleet renewal innovation project. Further details of this proposal are set out in the Ministry of Business, Innovation and Employment funded business case at: www.mbie.govt.nz dmsdocument/26683-new-zealand-inshore-fishing-fleet-build-capability-final-business-case.

New or significantly upgraded vessels would provide the industry with greater fuel efficiency and lower emissions, up-to-date fishing methods, and modern living quarters that are more appealing to crew. Building new vessels in Aotearoa New Zealand, rather than offshore, would provide well-paid, quality jobs and training for New Zealanders, delivering social and economic benefits for local communities. Collaboration within the industry and with government would be required to deliver a standardised (sister ship) design and develop this country's vessel building capacity.

The action we will take

Industry will reach agreement on a standardised (sister ship) design for the inshore fishing fleet and following this agreement individual businesses will commit to purchase vessel(s).

Government will identify support available to facilitate the development of an Aotearoa New Zealand energy efficient vessel building industry.

In three years

As a result of this action, in three years:

- A decision will have been reached on whether to progress a standardised (sister ship) design for the inshore fleet and the financial feasibility of building these vessels in Aotearoa New Zealand.
- Uneconomic older fishing vessels will be being retired from the fleet.
- Quota owners, fishers and integrated companies will be working on catch plans and partnerships to invest in efficient and environmentally sustainable fishing vessels.

NGĀ MĀTAI TAKE/CASE STUDY

Cyber Physical Seafood Systems (Cyber-Marine): Extracting maximum value from seafood

Cyber-Marine is a multi-million-dollar research programme aimed at achieving maximised value from all seafood. Making the best use of all raw material will allow the industry to grow without increasing the volume of wild caught fish.

Seafood contains a large variety of molecules that have a wide range of high value applications, from big structural proteins for biomedical scaffolds, through to anti-inflammatory Omega-3s and blood pressure-lowering or anti-aging peptides. Many of these molecules are present outside of the portion of the fish processed for food, for example, in the skin, viscera, and bones.

The Cyber-Marine programme is developing new technologies to extract these useful molecules during seafood processing. Ultimately, the programme aims to create an automated AI system that will detect the composition of materials and direct how a factory processes the seafood, extracting all available molecules and retaining their useful properties during the process. If successful, this could transform the way seafood operators do business and open up a range of new opportunities.

Plant & Food Research is leading this project which is funded by the Ministry of Business, Innovation and Employment's Endeavour Fund.

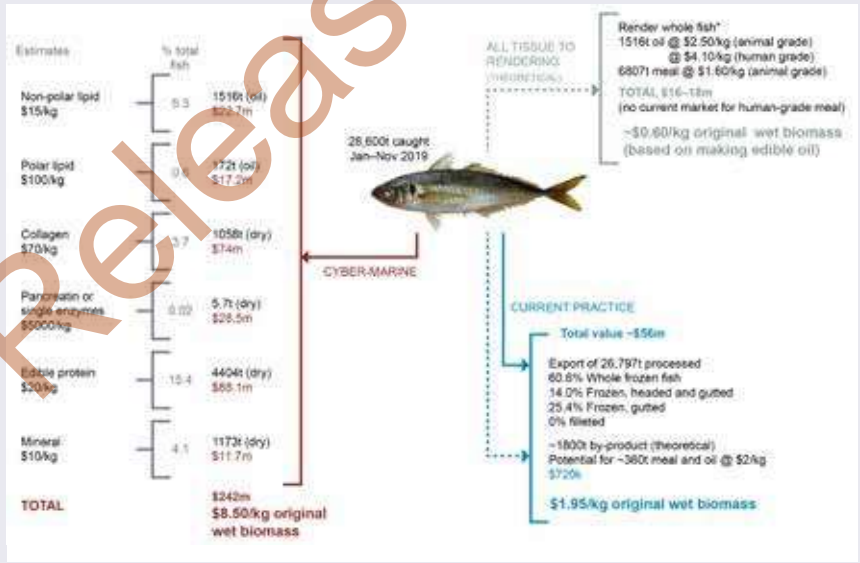


Image source: Plant and Food Research

2.6 Improve the investment environment for the seafood industry:

- **2.6.1** explore changes to government settings, including exploring the introduction of tax measures, like accelerated depreciation; and
- **2.6.2** encourage business arrangements (for example, longer-term ACE packages) to enable increased investment across the value chain, from fish to fork.

The current state

The fishing industry is capital intensive. In 2016, Sealord invested $70 million in a deepwater vessel, and in its 2022 Annual Report, Sanford advised that it is planning to invest $30 million in a new scampi vessel. The cost of capital and returns on investment influence business investment decisions across the value chain.

Government taxation, business support and regulatory settings form part of the environment within which businesses make investment decisions. There are a range of programmes available to support businesses, including those in the fishing industry, to access finance to grow their business.

The action we will take

Government will assess the benefits and costs of mechanisms to improve the investment environment for fishing and seafood processing, including accelerated depreciation.

Individual businesses will consider business arrangements that will support investment across the value chain.

In three years

As a result of this action, in three years:

- Government will have made decisions on any mechanisms to support investment in the fishing industry that are consistent with Aotearoa New Zealand's international trade obligations.
- Business arrangements will be supporting investment to the extent possible.

2.7 Invest in priority automation solutions that meet business needs.

The current state

Most seafood businesses use some form of automated machinery in their factories or vessels, although the level varies across companies and the type of operation. Automation in processing, grading and packing is possible on a species-by-species basis. For example, deepwater factory trawlers that target hoki for most of the year have been automated with mechanical filleting and skinning machines. However, equipment capable of automating the entire process for several species on the same vessel does not currently exist. Partial automation is a possibility when new replacement vessels come online.

A priority in the industry's Seafood Workforce Transition Plan is the collaborative development of automated aquaculture processing to support the sector to grow. This will mean less reliance on lower skilled, lower paid, repetitive roles, which are unattractive to most workers. Automation developments in aquaculture processing may have some broader applications for seafood processing.

Investment in automation is a business decision made by individual firms, influenced by:

- the availability of technology – there is less risk in adopting technology that has been tested and already commercialised;
- the availability of alternative business investments;
- the financial capacity of the business to invest and the return on investment; and
- the products valued and demanded by consumers – for some products the highest value is for a product in a natural state, for example, fish that is unprocessed and not gutted or scaled.

Automation can occur across the value chain, and there are available technologies in the packeting, palletising and warehouse end of the value chain.

The action we will take

Industry will invest in priority automation solutions across the fishing industry, including aquaculture, and support people who are impacted by automation to transition to new roles.

In three years

As a result of this action, in three years:

- Industry will be well informed of available technology and businesses will be making decisions to invest.
- People will be supported to train for new roles if roles are being replaced by automation.

NGĀ MĀTAI TAKE/CASE STUDY

Valka Water Jet Cutter: Processing innovation at Moana

Moana has invested in a Valka Water Jet Cutter machine which has enabled the company to improve fish processing efficiency, while also improving the quality of the product and reducing health and safety risks for workers.

This state-of-the-art processing innovation is designed to remove the pin-bone efficiently and effectively from fish fillets, using x-ray technology and flexible, high pressure water jet cutting arms.

It can increase output by up to 20 percent per worker per hour, which has helped the company in the current tight labour market. Workers who previously manually removed pin-bones and trimmed fillets have been relocated to harder to staff areas of the production line, such as the cutting line.

Watch the video on YouTube
https://youtube/Mhx9Op7msnA

He tirohanga ki te tangata me ngā iwi
People and communities at a glance

New Zealanders have a special connection with the ocean

Aotearoa has the **ninth longest coastline in the world.**

Seafood was landed in **188 locations** across the country in 2022, and processed at facilities in **14 towns and cities.**

About **13%** **of our population fish recreationally,** either to feed their whānau or to spend time in the great outdoors.

People are at the heart of the commercial fishing industry

89% of the people who work in the seafood sector **are New Zealanders.**

Across all at-sea roles in the largest seafood firms, the **median wage in 2021 was $83,909 per year.** Skippers can make three times this amount, while shore-based processing staff made an average of $50,402 per year.[22]

64% **of skippers** are aged 50 and over.

A Seafood Sector Agreement sets the conditions for the sector to hire migrant workers.

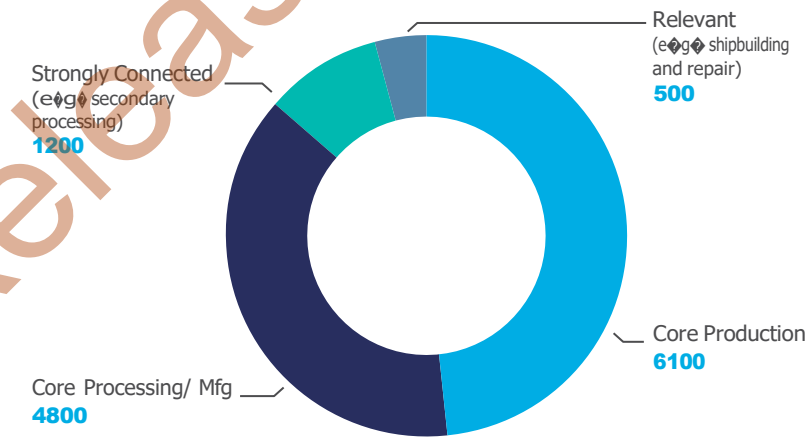
Tangaroa sustains people's wellbeing

FirstMate navigators have had **over 890 wellbeing conversations** with fishers and their whānau since 2021.

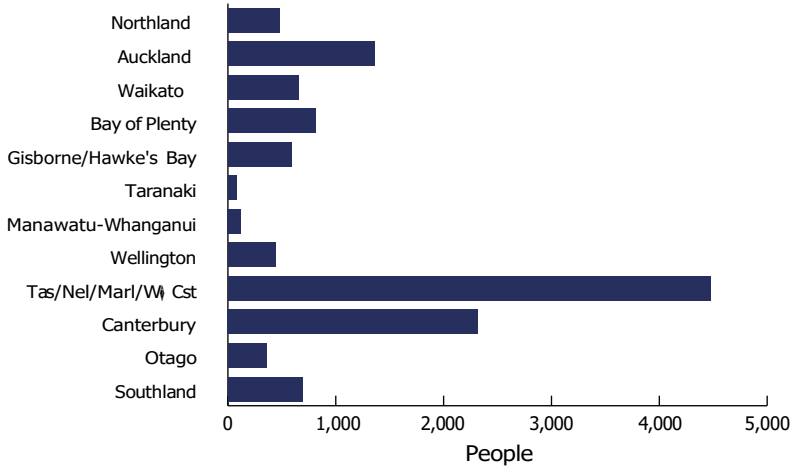
There are **over 600 kaitiaki** around the country who manage customary fisheries for their local communities.

There are **around 195 honorary fishery officers** who play an important part in patrolling the coastline and helping preserve our fisheries.

Seafood workforce



Workforce regional breakdown



Source: www.workforceinsights.govt.nz (Figures have been rounded to the nearest hundred for workforce count)

22 Te whakatipu I ngā tāngata o Tangaroa | Growing ocean people, October 2021

Ngā mahi hei tautoko i te tangata me ngā hapori
Actions to support people and communities

People are at the heart of the industry, and their skills, capabilities and passion will create the industry of the future.

The actions in the plan will support those currently working in the industry to adapt to change as the industry strengthens its environmental performance, invests and creates value. The actions will also develop the workforce of the future, providing meaningful employment in regional communities. Government will take a just transition approach to supporting communities as we move towards a low emissions economy and fishing industry.

The broader community will also benefit from the actions in this plan. Seafood lovers will enjoy the fish harvested by the industry and the promotion of the diverse seafood available. Those who enjoy Aotearoa New Zealand's easy accessibility to the sea and the biodiversity of our ocean ecosystem will benefit from the actions to improve the environmental performance of the industry and to share data and insights about the industry and fisheries management.

Creating connections between fishers and their local communities will help New Zealanders access fresh fish and develop relationships with the people who harvest the fish. Improving perceptions of fishers and knowledge of the industry will have a positive influence on people being interested and willing to work in the industry.

Te tautoko i ngā tāngata i roto i te ahumahi kia momoho ai
Supporting people in the industry to thrive

3.1 Provide advice (particularly for small fishers) on fishing with selectivity and low environmental impact, improving vessel energy efficiency, and on effective business practices.

The current state
Many fishers have made changes to their fishing gear and approach to improve selectivity and environmental performance. Some fishers readily share information with others on the changes they have made, while others see it as part of their competitive advantage so are less willing to share their intellectual property.

Other sources of information for fishers include advice on fishing gear from companies selling gear, or on seabird mitigation from liaison officers. Some large companies also provide support to their ACE fishers, including to upskill by undertaking international sustainable fishing courses.

High fuel prices have encouraged all fishers to focus on fuel efficiency. There is no systematic way of sharing fuel efficiency measures.

Action we will take
Industry will provide tailored information to fishers on sustainable fishing practices and vessel energy efficiency. This approach could be part of a navigator or advisory service for fishers also providing advice in relation to Action 1.2 and Action 1.5.

In three years
As a result of this action, in three years:

- Fishers will have up-to-date information on sustainable fishing and options for improving vessel efficiency and reducing carbon emissions.
- Fishers will be using up-to-date fishing practices and will be optimising the energy efficiency of their vessels lifting the environmental performance of the whole industry.

3.2 Provide wellbeing support to those who work in the sector, including new recruits and those who are transitioning to retirement.

The current state
Many businesses provide wellbeing support for their employees, such as the employee assistance programmes available in larger companies.

FirstMate New Zealand supports the health and wellbeing of people across the commercial seafood sector. It offers businesses, fishers and their whānau guidance, direction and support to help navigate the pressures and complexities that come with the job.

FirstMate's 14 navigators have had hundreds of conversations with fishers and their whānau across the country since 2021 and have aided them to access support and wellbeing services. As initial government funding ends in June 2023, industry and government need to work together to continue providing wellbeing services to people working in the sector.

The fishing workforce is aging with the average age of skippers being over 50 years old and fewer young people coming into the industry. These demographic changes may require a bespoke focus on succession planning and retirement for this component of the workforce when providing wellbeing support.

Businesses will continue to provide wellbeing support to their employees.

Action we will take

Industry and government will secure ongoing funding for FirstMate or will agree alternative ways to support those who work in the sector.

In three years

As a result of this action, in three years:

- People across the sector will know who and how to reach out for tailored seafood sector wellbeing support when they need support.
- Wellbeing outcomes for people in the industry will be improving.
- Support will be provided to those retiring and exiting the industry.

NGĀ MĀTAI TAKE/CASE STUDY

First Mate – supporting fishers and their whānau

Image source: FirstMate

Working at sea can be very challenging – mentally, physically, legally and financially. As things continue to change, it is vital that people in the industry – and their whānau – have the support they need to adjust and thrive.

Since July 2019 FirstMate have:

- supported 231 individuals by referring them to counselling and wellbeing services, or providing administrative assistance with a variety of reporting types;
- carried out 1,092 total interactions with individuals;
- organised seven wellbeing workshops, held in Wellington, New Plymouth, Auckland, Timaru, Kaikoura and Nelson; and
- held 48 industry engagements, including exhibitions at seafood conferences across the country, and supported government at electronic reporting and camera workshops.

Example

Fisher 1 had a crew member pass away on-board who was not located in the region. FirstMate got the boat blessed, liaised with Police and talked with the rest of the crew.

"The kindness and help they gave the boat was bloody good."

Example

The pressures of the quota system caused Fisher 2 to rely on alcohol. FirstMate's support was instant. Fisher 2 receives regular check-ins and someone stayed the night with them. They are no longer struggling with alcoholism.

"It really felt like they were supporting you."

Example

Fisher 3's skipper underwent Maritime NZ investigation due to drug use on-board the boat. Fisher 3 lost everything. The stress of it all was getting them down. FirstMate took the pressure off by finding someone to deal with the phone calls, insurance and note-taking.

"I recommend them to people. Talk to FirstMate – it helps."

Example

Fisher 4 had legal action taken against them by IRD because of owing business tax debt. A FirstMate navigator went to an IRD meeting with Fisher 4 and then linked them with professionals who could continue helping them.

"FirstMate are the most amazing support group where you feel safe."

NGĀ MĀTAI TAKE/CASE STUDY

Māori businesses developing the workforce of the future

The nature of the of the inter-generational Māori Fisheries Settlement means that Māori will always be involved in fisheries. There are a number of programmes providing opportunities for Māori to be involved in all levels of the fishing industry, and a few are highlighted here.

Image source: nzstory.govt.nz

Image source: nzstory.govt.nz

Māori business leaders of tomorrow

In 2022, Moana introduced an Associate Director Programme to provide opportunities for the Māori business leaders of tomorrow. The Associate Directors gain exposure to a large, successful Māori business and the chance to learn from an experienced board of directors. In turn, the Moana Board learned from the Associate Directors, unfurling new possibilities for the future.

The first two of the future leaders appointed as Associate Directors are Ngarimu Parata (Ngāti Porou, Ngāi Tahu) and Linda Grave (Whakatōhea).

Te Pae Tawhiti Kaimoana Enhancement Scholarships – support for tertiary study

The Te Pae Tawhiti Kaimoana Enhancement Scholarship was established to support Māori with aspirations to contribute to and work within the Māori marine and/or kaimoana industry.

The scholarship is available for students of Māori descent who are enrolled in a kaimoana enhancement related tertiary programme which is defined as:

- contributing towards the production of sustainable, regenerative or restorative kaimoana, for example, fisheries or aquaculture, business studies;
- environmental studies that support the production of sustainable kaimoana, for example, climate change, marine ecosystems, marine sciences; and
- social or political studies that support fisheries policy development.

In 2022, the scholarship was awarded to:

- Te Waikamihi Lambert (Ngāti Awa, Tūhoe) who is undertaking a Bachelor of Science and has been involved in voluntary work with mussels in the Ohiwa Harbour.
- Michaela Martin (Ngāti Hauiti, Ngāti Whitikaupeka) who has completed a Bachelor of Business and is now undertaking a Bachelor of Environmental Studies.

Image source: Sealord

Sealord – strengthening iwi links brings new crew members

The collaborative agreement, Nga Tapuwae o Māui, which Sealord signed with 41 iwi groups in 2019, provides iwi members with opportunities for training and employment in addition to the agreement to catch the quota they hold in deepwater fisheries.

As part of providing opportunities, iwi delegates visited Sealord to learn about career opportunities on offer for rangatahi and the diversity of roles available in the company. Three new recruits joined the vessel *FV Rehua*:

- Te Kaahui Nepia (TK), from Ngāruawāhia, who had come through the Westport Deep Sea Fishing School and who experienced some severe weather conditions on the first voyage and was pleasantly surprised not to get seasick once.
- Cody Tukaki, from Kaikohe in the Far North and from Ngāti te Rangi iwi, who worked in the freezer on the vessel and while it was tied up also put in some extra hours working at Sealord's land-based wet fish factory in Nelson.
- Dusky Pineaha – a father of four, from Muriwhenua iwi and of Ngāpuhi descent – who started on the boat just two days after finishing the course in Westport building on his deepwater experience fishing aboard a scampi vessel.

Note: This material has been drawn from public information – Moana 2022 Annual report and the Te Pae Tawhiti Scholarship Booklet.

Te whakawhanake i te ohu mahi hei whakatipu i te ahumahi

Developing the workforce to grow the industry

3.3 Develop a communication strategy on the career opportunities and benefits of working in the industry.

The current state

Attracting and retaining workers at all skill levels is an ongoing challenge for the industry. This is partially due to the nature of the work, but also to perceptions of the industry, which make the industry less attractive than other industries which are also competing for workers. Many outside the industry are unaware of the benefits that can come with working in at-sea roles in the sector, such as high pay and generous leave provisions.

The promotion of seafood sector roles is left to individual companies and often reaches people once they already have preconceived ideas about the industry.

There is no clear, co-ordinated messaging from industry to inform the public's view of working in the sector.

Addressing this issue would be consistent with the 'Perception Campaign Strategy' initiative of the Seafood Workforce Transition Plan, agreed by industry in 2022.

Action we will take

Industry will develop a communication strategy to communicate the career opportunities and benefits of working in the sector. The strategy will include specific elements tailored to rangatahi and iwi. The strategy will be supported by Action 3.7 and Action 3.8 that will help to shape a more informed public perception of the industry.

In three years

As a result of this action, in three years:

- New Zealanders, in particular, rangatahi, will have a better understanding of employment opportunities and career pathways in the industry.
- People who would enjoy the type of work on offer will have the knowledge needed to decide whether to enter the industry.

3.4 Work more closely with the education sector to develop and implement fit-for-purpose qualifications and training.

The current state

Seafood New Zealand is engaging with the newly formed Muka Tangata Workforce Development Council to ensure seafood industry skills needs are understood as part of the new approach to vocational education and training. Muka Tangata is currently reviewing seafood qualifications, a review of the seafood processing, commercial fishing and aquaculture qualifications delivered through vocational education and training.

There are clear qualification requirements and pathways for at-sea roles due to the international standards that need to be met. However, these pathways are not widely understood or promoted to rangatahi who could be interested in a career in the sector while at school.

Maritime New Zealand is also exploring options to address on-water workforce issues from a cross-maritime perspective. There is significant overlap in the training and ticketing requirements for the operation of fishing vessels and other maritime vessels. The Maritime New Zealand initiative is consistent with the 'Working with the Education Sector' initiative of the Seafood Workforce Transition Plan, agreed by industry in 2022.

Action we will take

Industry will promote clear pathways for building skills and gaining qualifications in the industry and will work with education providers, including universities, to deliver the skills and qualifications needed.

Industry will develop case studies and information on the sector to support career advisors.

In three years

As a result of this action, in three years:

- Seafood sector roles will be part of the skills pipeline being delivered by the vocational education sector. Rangatahi and new entrants to the industry will have a clear pathway to build their skills and gain qualifications that reflect their capabilities.
- Relationships between industry and the education sector will be strengthened and new relationships formed.
- Schools will have industry-informed insight into how the seafood sector operates and will use this to inform students and parents of career opportunities in the sector.
- New industry placements or apprenticeships will enable rangatahi to experience the industry first-hand.

3.5 Assess and implement initiatives to improve seasonal and generational retention.

The current state

The seafood workforce is aging, particularly those who operate fishing vessels, and generational changes mean fewer rangatahi are coming into the industry to fill these roles. Many at-sea roles are highly technical and require years of training. The industry needs young people who are willing to dedicate the time and effort to get the right qualifications in order to maintain the skillset of the workforce. The sector has issues attracting rangatahi for these roles, and even within fishing whānau, there are anecdotal reports that many in the younger generation do not want to carry on the family business.

The sector has relied on seasonal workers, such as working holidaymakers, to fill processing roles. There is higher labour demand at particular points throughout the year due to seasonality. However, relying on a transient workforce in the current tight labour market has left the industry competing hard to attract and retain workers, and there are not enough people coming through to fill the gaps.

Many seafood industry jobs are located in remote areas with a small local workforce, which can make attracting and retaining workers even more challenging.

Addressing this issue would be consistent with the 'Retention – Seasonal and Generational' initiative of the Seafood Workforce Transition Plan, agreed by industry in 2022.

Action we will take

Industry employers will implement more measures to incentivise staff retention.

Industry will provide fishers with succession planning support.

In three years

As a result of this action, in three years:

- More rangatahi will be entering and staying in the sector.
- More year-round employment opportunities will be available for those working in the sector. This will be achieved were possible by retaining staff during shutdowns, elongating the season, or developing relationships with neighbouring businesses.

Te tautoko i ngā hapori ki te āhei atu ki ngā kai moana ā-rohe me te hono atu ki ngā mahinga ika

Supporting communities to access local seafood and connect with fisheries

3.6 Promote domestic consumption and the nutritional benefit of New Zealand seafood, including encouraging local purchasing of fish.

The current state

New Zealanders currently buy their seafood in a variety of ways, including from fishmongers, supermarkets, online and wharf sales. For customers who want to consume food grown and harvested locally, it can be difficult to establish whether the fish available for sale was caught locally or what's harvested nearby. In some communities, there are direct connections between local fishers and consumers.

Aotearoa New Zealand harvests a wide range of seafood at a variety of price points. Many consumers choose from a limited number of favoured species.

Action we will take

Industry will promote consumption of the wide range of seafood available in Aotearoa New Zealand and look to inform consumers about what's caught locally so that product can be purchased more easily.

Advice will be provided to fishers who wish to develop business models enabling the local purchase of fish, including sharing examples of fishers who successfully sell fish to their local community. This approach could be part of the potential navigator/advisory service for fishers described in Action 3.1.

Government has a range of services available to support businesses through business.govt.nz. Government will promote access to these tools to support businesses that wish to supply local consumers and build connections with their communities.

In three years

As a result of this action, in three years:

- New Zealanders will be more aware of the local seafood available and the avenues to purchase that for domestic consumption.
- A wider variety of seafood will be consumed in Aotearoa New Zealand, reflecting the multi-species catch from local fisheries.
- The nutritional benefits of seafood will be widely recognised by local consumers.

3.7 Develop a communication strategy providing a window into the industry, the actions taken to support communities and a healthy marine ecosystem.

The current state

New Zealanders have limited direct connection with the seafood industry and fishers and form perceptions of the industry from a range of information sources. Some sources of information are not reliable or up to date and can present an unbalanced view of commercial fishing leading to negative perceptions of the industry.

Action we will take

Industry will develop a communication strategy to share more broadly current practices and actions to reduce the environmental impact of fishing activity. The industry will also share the human stories of those who work in the sector.

In three years

As a result of this action, in three years:

- New Zealanders will have a better understanding of the seafood industry and the environmental impact of utilising the ocean to provide food and bioproducts.
- The better understanding of the seafood industry and appreciation for how the environmental impacts of fishing are reducing will lead to young New Zealanders being open to considering a career in the industry.

3.8 Increase communications about New Zealand's approach to fisheries management.

The current state

Aotearoa New Zealand's fisheries management system manages the sustainable use of fisheries. The QMS, introduced in 1986, sets limits for catch of commercial species. The total allowable catch limits are set on the best available information, including research and reporting of fish removals.

Recent amendments to the Fisheries Act 1996 have strengthened the fisheries management system.

Action we will take

Government will increase communications about the fisheries management system. This action will be supported by Action 1.4.4 making more data and insights available and accessible to the public.

In three years

As a result of this action, in three years:

- New Zealanders will have an understanding of the fisheries management system and how the environmental impacts of fishing are managed through regulatory and compliance action.

Image source: Seafood NZ

Ngā huarahi hei whai
Next steps

This section sets out our approach to the governance and implementation of the plan.

Gurnard **(image source:** nzstory.govt.nz)

Ngā huarahi hei whai
Next steps

Governance and implementation

An Implementation Steering Group will take responsibility for the achievement of the Fisheries ITP actions, supporting progress and delivery, helping manage risks, and enabling collaboration and co-ordination with different stakeholders. The Steering Group will:

- champion the ITP's vision and objectives;
- ensure the implementation plan is informed by mātauranga Māori and western science;
- provide strategic direction to ITP implementation secretariat (Secretariat) Fisheries New Zealand (FNZ);
- maintain oversight and monitor implementation of the ITP's actions to support delivery of ITP outcomes;
- oversee reporting against the ITP's actions;
- recommend and facilitate the implementation of the ITP's actions within their respective domains, including supporting co-investment from businesses and groups that members belong to;
- support and enable engagement with iwi/Māori and the wider fishing industry;
- engage with the Minister for Oceans and Fisheries at relevant points and at least annually during ITP implementation; and
- develop and endorse a refreshed action plan for the ITP in 2025/26 to deliver to the Minister for Oceans and Fisheries.

Steering Group members will be drawn from the following ITP partners:

- Iwi Māori;*
- Industry – quota owners (large and small operators);
- Industry – workers (on water and onshore);
- Government; and
- Environmental interests.

* Good representation of Māori across the above groups is expected given high levels of ownership and investment in industry.

Implementation timeline

Year 1

→ Fisheries Industry Transformation Plan released

→ Implementation Steering Group established with support from FNZ Secretariat

→ Initial scoping of implementation plan, key priorities to progress:

- → Innovation programme to reduce environmental impact fishing (Action 1.1)
- → Improved data utilisation (Action 1.4)
- → Supporting people in the industry (Actions 3.1 & 3.2)
- → Confirm data available from industry and government sources to measure success

Year 2

→ Implementation plan refined and being implemented. Activities underway include:

- → Working groups established where required
- → Business plan(s) being prepared for innovation programme
- → Government reviewing regulation to support innovation (Action 1.1.2) and guidelines for release of data (Action 1.4.1)
- → Industry developing workforce to grow the industry (Actions 3.3-3.6)
- → Communications strategies being developed and implemented (Actions 3.7 & 3.8)

Year 3

→ Continued implementation and refinement of plan. Activities underway include:

- → Reviewing and scoping next phases in the innovation programme to reduce environmental impact of fishing (Action 1.1)
- → Scoping next phase of activity to continue utilising data (Action 1.4)
- → Evaluating progress made on supporting people in the industry and developing the workforce of the future (Actions 3.1–3.5)
- → Monitoring progress against measures of success

Whakarāpopototanga o ngā mahi o te Mahere Takahuritanga Ahumahi Hao Ika

Summary of Fisheries Industry Transformation Plan actions

Snapper **(image source:** Getty Images)

Wāhi matua 1: Te whakakaha i te mahinga ā-taiao
Priority area 1: Strengthening environmental performance

ACTION		LEAD
Fishing with care and precision to support healthy ocean ecosystems		
1.1	Invest in an innovation programme to accelerate selective fishing and further reduce benthic impacts and protected species interactions and within the programme:	Joint
1.1.1	establish a joint industry/government project to source and develop technology that minimises adverse impact on the ocean floor to the maximum extent practicable; and	Joint
1.1.2	review regulatory settings and operations to identify and mitigate regulatory barriers to fishing innovation.	Government
1.2	Incentivise and facilitate fast adoption of proven efficient and environmentally sustainable fishing gear and methods by fishers by systematically identifying and then adopting improvements for each type of fishing method to reduce or remove environmental impact.	Industry
1.3	Investigate opportunities to apply new and mātauranga Māori methods of habitat restoration and enhancement in New Zealand, for example, sea ranching, seagrass and kelp restoration.	Joint

ACTION		LEAD
Utilising data to fish selectively, efficiently and to enhance the transparency of fishing activity		
1.4	Advance the use of marine and fisheries data and analytical and spatial models to support fishers to avoid unwanted catch (including protected species), fish efficiently and to enhance transparency:	
1.4.1	address barriers to the regular and timely release and sharing of data collected from fishers, including reviewing the Guidelines for Fisheries Data Release;	Government
1.4.2	build technology and products that leverage data to support fishers;	Industry
1.4.3	collect and use appropriate data to support timely decision-making by fishers and fisheries managers to manage local distribution, seasonal variation and effects on the aquatic environment; and	Government
1.4.4	improve public availability of fisheries data and insights to enhance transparency.	Government
Reducing carbon footprint and improving resilience to climate change		
1.5	Invest in decarbonising New Zealand seafood businesses:	
1.5.1	develop a standardised measurement tool to support businesses to measure and reduce their carbon footprint; and	Joint
1.5.2	develop and publish a report on the industry carbon footprint.	Government
1.6	Invest in innovation to reduce the environmental impact of transporting premium seafood to international markets.	Industry
1.7	Support work underway under the Seafood Sector Adaptation Strategy to develop an adaptation pathway framework to assist the sector to prepare for, and adapt to, climate change.	Joint

Note: *In the context of this document, 'lead' means to convene and take the action forward to report back to the Implementation Steering Group (to be established). It does not mean taking on sole responsibility for funding or implementation.*

Wāhi matua 2: Te whakapai ake i te whai hua me te whakaputaranga
Priority area 2: Improving profitability and productivity

ACTION		LEAD
Increasing exports of high value seafood and bioproducts to discerning international consumers		
2.1	Promote the New Zealand seafood story in priority international markets highlighting the environmental sustainability, transparency and traceability of New Zealand caught product.	Joint
2.2	Support emerging innovative seafood and bioproduct businesses to accelerate successful expansion into export markets.	Joint
2.3	Support industry to access information on export market requirements and compile the data needed to demonstrate transparency and traceability requirements.	Joint
2.4	Accelerate the shift of large volumes of non-food fish material from low to higher value applications to target market opportunities.	Joint

ACTION		LEAD
Improving returns and investment across the value chain		
2.5	Invest in efficient and environmentally sustainable fishing vessels:	
2.5.1	reach industry-wide agreement on a standardised (sister ship) design for the replacement of aging vessels in the inshore fleet; and	Industry
2.5.2	investigate whether any government support is available for the development of a New Zealand energy efficient vessel building industry.	Government
2.6	Improve the investment environment for the seafood industry:	
2.6.1	explore changes to government settings, including tax measures, like accelerated depreciation; and	Government
2.6.2	encourage business arrangements (for example, longer-term ACE packages) to enable increased investment across the value chain, from fish to fork.	Industry
2.7	Invest in priority automation solutions that meet business needs.	Industry

Wāhi matua 3: Te tautoko i ngā tāngata me ngā hapori
Priority area 3: Supporting people and communities

ACTION		LEAD
Supporting people in the industry to thrive		
3.1	Provide advice (particularly for small fishers) on fishing with selectivity and low environmental impact, improving vessel energy efficiency, and on effective business practices.	Industry
3.2	Provide wellbeing support to those who work in the sector; including new recruits and those who are transitioning to retirement.	Joint
Developing the workforce to grow the industry		
3.3	Develop a communication strategy on career opportunities and the benefits of working in the industry.	Industry
3.4	Work more closely with the education sector to develop and implement fit-for-purpose qualifications and training.	Industry
3.5	Assess and implement initiatives to improve seasonal and generational retention.	Industry

ACTION		LEAD
Supporting communities to access local seafood and connect with fisheries		
3.6	Promote domestic consumption and the nutritional benefit of New Zealand seafood including encouraging local purchasing of fish.	Industry
3.7	Develop a communication strategy providing a window into the industry, the actions taken to support communities and a healthy marine ecosystem.	Industry
3.8	Increase communications about New Zealand's approach to fisheries management.	Government

Trevally **(image source:** MPI)

Te Kāwanatanga o Aotearoa
New Zealand Government